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STRESS, ADAPTATION AND COPING

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In preparing my comments for today's colloquium, I had the obvious coping advantage by being late in this preparation, of reviewing a number of the presentations that follow mine. Many of you have examined the concept of stress, and several have reviewed much of the relevant literature, for example, the introductory remarks of the "Stress and Family Violence" chapter by Keith Farrington (1979, in press). I doubt that I could substantially improve on these reviews and would recommend them to you as a relevant statement about the current status of stress research. For those who are interested further, the work of Richard Lazarus from the University of California at Berkeley provides an excellent summary and discussion of the conceptual and technical problems for this oft-used but ambiguous concept of stress. Rather than review, therefore, what has been competently done by others both present at this meeting and others who are outsiders to these meetings, I've decided to draw on two of my ongoing studies to demonstrate some of the issues that are germane to the focus of this symposium. Implicit in my remarks, since I have not directly studied criminal behavior, is a model shared by many social scientists in the stress-coping-adaptation framework. This framework revolves around the concept that criminal behavior is effective (from the perspective of coping strategies that maintain homeostasis for the individual) and that some other forms of what could be classified as criminal behavior, such as violence, are often indications of failures in the coping system. The simple-minded perspective enables those of us who have not directly investigated criminal behavior to at least think about it, hopefully in some meaningful ways.

In portraying the inter-related issues of stress, coping and adaptation, I will be drawing on a longitudinal study which has been underway since 1972. This study, under the joint direction of Dr. Leonard Pearlin from the National Institute of Mental Health and myself, began then by scheduled interviews with 2300 people representative of the adult population of the census-defined, urbanized area of Chicago. These interviews had three main foci: the assessment of a wide range of problems and hardships that people experience as workers and breadwinners, husbands and wives, and as parents; the identification of resources and responses they utilize in coping with these life strains; and the enumeration of symptoms indicative of emotional stress and psychological disturbance. In 1976-77, a subsample of over 1100 people was drawn whose social characteristics were

similar to the original 2300. The follow-up survey, like the first, was also broadly concerned with the problems and challenges that converge on the lives of people and their psychological effects. Before describing some of the findings relevant to our concerns in this colloquium, let me place our work in a context. Along with many investigators, we see the proper work of social science to be the illumination of the connection between personal problems and social problems. However, the manner in which the study of human behavior has been traditionally divided among academic turfs masks these connections. There are those who study personal problems, relying on speculation and drawing connections of these problems to the social milieu of people, and correspondingly, those who study the structure of society and its institutions and guess about their consequences for adaptation. Our concern has been to bring together these issues by empirically tracing out the links joining the psychological distress of people to the experiences they have within the context of their lives.

There is a substantial body of research, of course, whose purpose is similar to our own. Nevertheless, in some pivotal respects, the present inquiry is quite different from other studies, even from those with which it shares common goals. These differences can best be highlighted by providing a summary overview of earlier work.

One type of investigation, in its search for the contribution of social factors to adaptation, has emphasized correlations between the status characteristics of people and various indicators of psychological disturbance (Hollingshead & Redlich, 1958; Gurin et al., 1960; Srole et al., 1962; Dohrenwend & Dohrenwend, 1969). Characteristics such as sex, race, marital status, and socio-economic class indicate where people are positioned in the society. Such information is of paramount importance, for the ways that people's experience becomes organized and structured depend significantly on who they are and where they are located in the broader social order. The important conditions of life and the wide variety of experiences that unfold in life are typically associated with the social statuses of people. Paradoxically, it is the very richness of circumstances associated with status characteristics that makes knowledge of the characteristics alone a limited basis for identifying the social factors that affect adaptation. That is, status characteristics carry so much circumstantial and experiential freight that it is quite difficult to know with any precision what is contributing to their relationships with other attributes of people. To explicate these relationships, the circumstances and experiences associated with the status need to be recognized, delineated and measured at the outset. With information of this sort, it becomes possible to interpret empirically a relationship between the status and a dependent variable.

It is accurate to assert that research concerned with adaptation has depended too much on simply establishing associations between the status characteristics of people and their psychological states, then relying on conjecture to identify reasons for such associations.

A second type of research into social factors underlying adaptation has come into prominence in the past decade. It is pioneered in the work of Holmes and Rahe (1967) and other workers (Myers, et al., 1971) who have attempted to identify events in the lives of people that contribute to emotional stress and physical illness.

There are many methodological and conceptual problems associated with this instrument, most of which have been cogently discussed elsewhere (Brown, 1974; Rabkin & Struening, 1976). Yet, viewed against the background of the first type of study we discussed, the search for significant life-events can be seen as representing some forward movement. Specifically, it bespeaks the need to know more than the characteristics of people who are distressed; we also need to know the experiences that contribute to their distress. However, though the life-events instrument has succeeded in alerting us to gaps in our knowledge, it has thus far failed in closing these gaps. Aside from its serious methodological shortcomings, the major reason for this failure lies in its rather crude conceptual specification of events and experiences. Essentially events are treated as conglomerates of experience, unrelated to each other except by chance occurrence. To the extent that it is important to reconstruct the structure of experience from a patterning of events impinging on people over time and through space, the instrument is of limited usefulness. It provides only a score, a score that is produceable by many different combinations of life events. Research that seeks to understand the organization of events predictive of distress, not merely to assemble whatever information enhances prediction, cannot rely on life event scales in their present form.

A third and final type of research that can be identified is distinguished from the foregoing by its exclusive concern with the psychological impact of a single event. In terms of the sheer quantity of research into the social antecedents of distress, this is probably the most common. It includes, for example, studies of the psychological effects of such experiences as separation or divorce (Bachrach, 1975), losses resulting from death (Kastenbaum, 1974), struggling to earn a Ph.D. (Mechanic, 1962), having a first child (Smith, 1974), facing the "empty nest" (Deutscher, 1964), making the transition from high school to college (Silber, et al., 1961), relocation of the elderly (Lieberman, 1975), and other similar studies.

The intensive examination of single, traumatic and threatening situations has helped to enrich theories of psychological distress while contributing to an understanding of particular situations and their consequences. What we cannot know from these studies is the extent to which processes surrounding one event may be generalizeable to other events, or how the impact of an event may be regulated by other events taking place at the same time. As a result, the psychological effects that we might be attributing to a single event, may, in fact, be produced by several events occurring across a person's social roles. Ideally, of course, it would be desireable to observe all of the significant events and experiences impinging upon the lives of people through time, for such observation would help to understand more completely both the confluence of social factors to which people are exposed and their resultant psychological states. Our data fall far short of this ideal, but they do take us a step in its direction.

Our own work began by distinguishing two major types of events. One is represented in the gains and losses or major alterations of roles that predictably occur in the course of the unfolding life cycle. We refer to these as normative events in order to underscore the expectedness and regularity of their occurrence. The second type of event we refer to as non-normative; these are often crises that, although they commonly occur, are not easily predictable by people because they are not built into their movement across the span of life. Some of these relatively eruptive events may lead to loss, such as being fired from one's job or being divorced. Other non-normative events, such as illness, are disruptive without necessarily entailing role loss. In addition to the normative and non-normative events of life we shall examine persistent role problems. These are not events having a discrete onset in time but, on the contrary, acquire their presence insidiously and become relatively fixed and on-going in daily role experiences. Problems of this order are often chronic, low-keyed frustrations and hardships that people have to contend with in their occupations, their economic life and in their family relations. The normative and non-normative events and the more persistent role problems collectively constitute what we occasionally call life-strains.

It is around these three types of circumstances, we believe, that much of the social experience affecting the adaptation of people is organized. The analysis that we shall present is concerned in part with learning the extent to which each of them--normative role transitions, non-normative events, and durable role problems--affects adaptation. In addition, we shall seek to learn how their effects are exercised. Specifically, we shall be attempting to identify the mechanisms through which events come to result in emotional distress. Is it because important change always produces an inner disequilibrium

or psychic imbalance, or are there different processes that determine the impact of life events? We also need to know how life strains are distributed in a population. To the extent that these strains grow out of fundamental conditions in the larger social order, they are not spread randomly among people, but are likely to impinge on some groups more than others. An important aspect of the analysis is to observe how the problems and events of life are distributed among those who are differentially located in the society. Finally, we are interested in the procedures individuals use to re-establish equilibrium in response to such events and strains.

In the service of time and perhaps boredom, let me take a rather large leap and ignore the methodological and analytic procedures used to convert the survey data into findings.

The findings that I believe are relevant to our concern in this colloquium have to do with the following issues: 1) the social distribution of stress; 2) the relative impact of different life stresses; and 3) how such events come to matter, or put in another way, the mechanisms through which life stress impacts on adaptation; and 4) the role of coping strategies in mitigating maladaptive responses. In this latter question, I'll be reporting some of the findings relevant to two ways of looking at coping. Coping in its more usual sense comprises the strategies that are internal to the person; adjustment involves problem-solving through the use of coping or defense mechanisms directed towards the events or the consequences of the events. However, there is another way of examining coping, that is, how individuals use their social matrix, external resources, in order to adapt to a stress condition. It is around these four issues that the remainder of my remarks today will be organized.

Social Distribution of Life Stress

Our findings, which have associated the occurrence of normative and non-normative events as well as role strains to such enduring characteristics as age, socio-economic status and sex, indicate that the events, transitions, and persistent role problems are not scattered helter-skelter throughout the population. Rather they tend to be more or less prevalent among groups having distinguishing social characteristics. The results support the assumption that there is a social epidemiology of major life strains. In all the major role areas of life, parenthood, marriage, economic and occupational, it is the young, lower socio-economic classes and women who are most vulnerable to the occurrence of life strain. As will be shown, such life stresses affect adaptation. The finding that certain individuals in our society are more likely to endure life stress is not a surprising one. What is important to our concern here is the

observation that groups vulnerable to high life stress are also, at least from the point of view of age and social class, those more likely to be involved in criminal behavior. However, the mere fact of this probabalistic association between life stress and structural conditions in our society is only a beginning in a long chain of understanding the relationship between such stress and subsequent adaptation.

Let me now turn to an examination of the actual influence of life strain on adaptation. The most general finding is that life strains--that is, events, transitions, and persistent problems in the major role areas of life--do indeed affect the well-being of people. There is however, substantial variation in the magnitude of their effects. Looking first at the occupational role, it is evident that each of the three types of life strain represent important sources of stress, for each is closely associated with emotional distress. The only exception in the occupational area is represented in promotion and retirement. The most potent of the occupational strains tend to entail non-normative loss: being fired or laid off, exiting from work because of health, being demoted. However, it is not the non-normative characteristic of the events alone that accounts for their effect, for the promotion which also has no normative basis in the life cycle is only slightly related to the stress. Nor is it loss alone that accounts for the effects, for job loss resulting from retirement is inconsequently related to the stress. It is perhaps the combination of unexpectedness and loss that is most critical in affecting the mental health of adults.

Turning to the marital area there are several important contrasts. It is of course expected that loss of a spouse through divorce, separation, or death is distressful. It is less expected however, that role problems persisting within intact marriages are even more likely than the disruption of marriage to produce stress.

Some of the events commonly viewed as representing trials or vicissitudes of parenthood, turn out not to be. It is a somewhat different story with the more durable problems of childrearing. As in each of the other role areas, the greater the intensity of the day-to-day problems encountered in this domain, the higher are the levels of anxiety and depression.

Overall an examination of our data suggests that it is the persistent day-to-day effects of marriage, parenthood, and occupational roles that are crucial in affecting the mental health of the adult population, more than either normative or eruptive events. This is not to say that certain specific events, particularly eruptive crises do not have profound impact on the adaptation of adults.

Mechanisms

In order to more fully understand the relationship between the lives of adults and adaptation, we turned our attention to the question of how such events come to matter.

A rather accepted view of social life and adult development is one of people being psychologically bombarded by a parade of changes. According to this view, change of all kinds imposes an inner need for readjustment. Whenever and however it occurs, it is likely to produce in people the signs of maladaptation. The explanation for distress is thus placed with the event itself and its interference with established habits and equilibria. It is our view that events and transitions affect people by altering the more enduring circumstances of their lives. Disturbance is most likely to surface when events adversely reshape important life circumstances with which people must contend over time. Thus, the event does not act solely or directly on the inner life, but through the reordering of more general life circumstances. In short, the impact of events is largely channeled through the persistent problems of roles.

Let us illustrate this point of view by presenting findings from two important areas of life strain. We begin by taking, as an illustration, people who in the past four years have experienced the unexpected and untoward events of being fired, laid off, demoted, or being forced to give up work because of ill health...events that have a substantial association with mental illness. These are events that are capable of creating persistent dislocation of the work role, in household financial matters, and in family relations. In other words, we examined the relationship of the event to changes in the day-to-day lives of the individuals involved and found that for those individuals who had the event but did not show alterations, for example in the marital area, the relationship between the occupational event and mental illness was reduced by 50%. It is not the event itself, but its apparent impact on other persistent conditions of life that appears to have the major impact on mental illness. For those individuals who had the same event and for whom we could find no effect or alterations in their enduring day-to-day role relationships in marriage and in parenthood, considerably less impact on their mental health was noted.

There are events involving role loss that suggest a second and somewhat different mechanism through which events come to exert their effects on psychological well-being. Normative transitions such as retirement or becoming a full-time homemaker and the loss of a marital partner through divorce, spearation or death are illustrative. By their very nature, these events involve more than yielding an old

role or status; they also entail the acquisition of a new role or status and an accompanying exposure to a new set of conditions. We have devised measures of the problems people encounter in their day-to-day lives as retirees, as homemakers, and as unmarried men and women. With these measures, it is possible to ascertain whether it is the movement out of the old role that provokes emotional distress, or the quality of people's experience within the new role. There is an association of .23 between retirement and mental distress. However, when we divided our population into different levels of the daily problems they found in their new roles of retiree and recalculated the relationship between the event and mental illness, we found that there is a substantial relationship ($r=.40$) between the event and mental symptoms for those who experience persistent day-to day problems as retirees and a zero relationship between event and mental symptoms for those who did not experience role problems. What matters more than the passage itself is the quality of experience at the transitional destination. Where people have made the passage and find relatively benign conditions in their new roles, they are every bit as likely to enjoy mental health as people whose occupational lives are stable.

In contemplating our findings, the question of directionality arises. We have been assuming that it is the life strains that eventuate in psychological distress. But it is not also reasonable to argue that a state of psychological distress may result in unfavorable events, especially those that are outside of normative change. Instead of job loss leading to mental illness for example, distress may cause people to lose their jobs. The fact that ours is a longitudinal study permitted us to in part answer this question. We examined non-normative, that is unexpectable events and found that there was no appreciable relationship between the event and the level of mental illness preceding the event. Rather the event was linked to substantial increase in mental illness following the event. It appears that the vagaries of life are not very likely to follow from earlier emotional disturbance, but emotional disturbance is quite likely to follow from these vagaries.

It is clear that both the normative and eruptive crises, are capable of producing major alterations in the psychological well-being of people. We believe that these effects are mediated through the influence of such events on the day-to-day behavior of adults in their important role areas. The effect of any particular event on adaptation, if it does not disturb the enduring role relationships, is minimal compared to the impact of the same event if it alters the way people live as husbands and wives, as parents, and as breadwinners. Life is altered more by the day-to-day, the drip-to-drip issues of living than it is by the major turning points themselves.

What these findings so far suggest is that it is not the life events themselves, the crises that people encounter that we need to address in searching for amelioration of maladaptation, but rather to examine the microscopic context in which individuals reside: their lives as workers or non-workers; the family; and their social connections that make more of a difference than do the events themselves. It is with these considerations that we now examine the strategies available to individuals in coping with life stress.

Coping refers to the behavior that protects people from being psychologically harmed by problematic social experience, a behavior that mediates the impact that societies have on their members. The protective function of coping behavior can be exercised in several ways: by eliminating or modifying conditions giving rise to problems; by perceptually controlling the meaning of experience in a manner that neutralizes its problematic character; and by keeping the emotional consequences of problems within manageable bounds. The efficacy of coping was evaluated by looking at individual differences in response to similar sets of stress, and determining the degree to which the person experiences distress according to the coping strategies they employed. The results indicate that individuals' coping interventions are most effective when dealing with problems within the close interpersonal role areas of marriage and child-rearing, and least effective with the more impersonal problems found in the occupational role. There is no such thing in the abstract as good coping strategies; rather, each particular area of life appears to have its own efficacious coping strategies. This does not mean however that there are not good and bad copers, but the particular strategies that individuals use in attempting to maintain homeostasis is contingent upon the particular life demands they are facing. Similar to the findings on the social epidemiology of life stress, coping strategies are unequally distributed in our society, with those of a lower socio-economic status having fewer and poorer effective coping strategies.

Clearly, as the results on coping demonstrate, as we move further away from the specifics of stress to the person's complex reaction to it, the role of such stress in the lives of people becomes less important than the various contextual and personal resource factors. If some forms of criminal behavior can be viewed as the failure to adequately cope with life stresses and strains, I would put my research priorities on a more thorough examination of the coping strategies used by such individuals. Perhaps more important is an emphasis on such stress mediating behaviors. We know little about them, how they are learned and under what conditions. We know little about their stability although we are reasonably certain that they are not enduring personality traits, but rather aspects of people that appear to vary from condition to condition. Although we know that

these coping strategies are not randomly distributed across our population, but rather are associated with the person's position in society, beyond broad theoretical speculations, we know little about how subcultures influence the development of such strategies. In a previously completed study, one that I am not reporting on today in which the effects of culture on patterns of adaptation was examined, we found large differences between three subcultural groups, the Irish, the Italian and the Polish, and their patterns of adaptation. Although all three samples were equally adapted, the methods each used for adaptation were distinctive according to their culture, and furthermore, a plausible relationship between ethnographic descriptions among these three subcultures and our findings on patterns of adaptation could be made. Such work is only a beginning in a complex set of investigations that are required to understand the development of coping strategies and the socialization processes that have shaped them through the formative years. We also know from this previous research that such strategies are not inherently stable, and that over the adult life span what patterns were adaptive in the 30's are not adaptive in the 60's. However, despite the prominence and continued interest in psychology on coping, it is an area of vast ignorance and poorly solved methodological dilemmas.

I want now to focus on a consideration of an alternative view of coping, that is utilization of societal resources by individuals under stress. Because of time limitations, I will try to draw a brief sketch of some of these findings. They have been more fully reported in the current issue of the American Journal of Community Psychology (November 1978).

The use of external resources can be best understood in terms of a stress model by seeing such coping strategies as occuring when the person's own internal adjustive mechanisms have failed to successfully maintain homeostasis. This formal statement about external resources and coping strategy should not however, be taken to suggest that the utilization of such resources occurs in the population among those least adequate to cope successfully. In one of our studies, we asked what are the characteristics of those who seek help as compared to those who do not. We systematically examined the relationship between help seeking behavior and a variety of demographic, psychological and social factors. In this study, a probability sample of urban adults, we compared those who sought help for one or more troublesome life changes with those who faced stressful circumstances without assistance. Formally, we examined three hypotheses: help seeking will vary directly with the number of troublesome events in the intensity of day-to-day strain confronting the individual; help seeking will vary inversely with the strength of personal resources like interpsychic coping strategies and personality dispositions which serve to dissipate stress; and the decision to seek help will be positively

associated with the breadth, frequency, and intimacy of informal contacts, and inversely with the strength of psychological barriers to help seeking.

We found that all types of problems prompt people to seek help. The number of troubled respondents seeking help was remarkably similar for different sources of stress: transition-related stress; crises; and day-to-day strains involved in the major role areas. The predominence of informal contacts is large, comprising 78% of all the helpers. When we examined our data, we found that in order to understand, or to develop a predictive model for who seeks help, there was considerable variation within groups of helpseekers and non-seekers. Most important was that the non-seekers of help were not all alike. Those who we classified as "self-reliant," who believed that they could cope with particular predicaments by themselves, showed many characteristics suggesting that they were accurate in their description of self. They had the strongest personal resources of any group. In contrast, the group of individuals that we termed "reluctant non-seekers" appeared to be a dangerously handicapped group. They reported the least effective coping repertoires and lowest self-esteem of any group, as well as incredibly unsupportive and unreliable informal networks and strong reservations about discussing their problems with others. It is these alienated, psychologically vulnerable individuals that are the real target of intervention. They are the ones who come to attention with only dramatic, antisocial consequences. Although there is a clear pattern of those who do not seek help and who in fact need it, our findings were mute, unfortunately, with regard to specific circumstances in these individuals' lives or their social contexts that make for this pattern. Social characteristics such as social class, race, or age did not substantially distinguish between those who sought help and those who did not. There were some significant findings with regard to race when educational level was taken into account; lower class blacks were less likely to seek help than their middle class counterparts. However, the strength of such predictions on the basis of demographic characteristics is limited, and we need to look further into this particularly vulnerable group of individuals who have few ties to community and relatively poor internal resources combined with a psychological reluctance to utilize what few they have externally in their formal network as well as professional helping systems. It is likely that among this group are many who would be relevant to the theme of the colloquium.

I have saved my most depressing findings for last. Like many in my field, I would have assumed that the utilization of helping systems, social networks and formal social structures, is an important resource in stress-coping. We investigated, again using our survey data, the question, "Does Help Help?" Within our sample, we selected out a variety of life stresses and took the entire populations who

face such stresses. These included: deaths of significant others; the aging of one's own parents; births; spouse illness; children's illness; unemployment; and children leaving home. We further subdivided the population facing each of these events into those who sought help from professional and formal systems, those who used informal help, and those who sought no help at all. Using our longitudinal data, we developed a series of measures of adaptation. Thus, we have a baseline measure on each of these individuals prior to the event that initiated a help seeking sequence, and similar measures subsequent to obtaining such help. Of course we do not have a random design, and we use a series of statistical controls to equate these groups (professional helpseekers, informal helpseekers, and non-helpseekers) on demographic characteristics, their perception of stress, the number of personal resources they had, access to help , and the time the event occurred relative to both baseline measure and post-help measure. Despite these statistical controls which attempted to rectify the obvious nonrandomness of "assignment" into help and non-help categories, we could not develop positive evidence that those who sought and received help were subsequently better adapted than those who experienced similarly stressful events but did not obtain help. In other words, we could not demonstrate in this study that the use of professional systems or informal social networks made a measurable difference in successful adaptation to crisis events.

Of course, in such survey data, we have little information on the quality of help which may in part account for this finding. This may perhaps be seen as an optimistic finding in that our findings indicate that most people can cope with the exigencies of life. On the other hand, it also raises fundamental questions about intervention strategies.

If such findings were paralleled in a population in which criminal behaviors of various types were examined and the findings were similar, then some important issues about intervention would be raised. What is clearest in our data overall, is that individuals can develop successful coping strategies, but we need to know much more about the conditions under which these strategies are developed and to what extent they are amenable to intentional change efforts.

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STRESS AND ASSAULT IN A NATIONAL SAMPLE OF AMERICAN FAMILIES*

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ABSTRACT

Data from a nationally representative sample of 2,143 American families is used to test the theory that stress is associated with assault against a marital partner only under certain conditions. The measure of stress was a modification of the Holmes-Rahe scale. The measure of assault was whether any of the following acts had occurred during a marital dispute during the previous year: punching, kicking, biting, hitting with an object, beating up, or using a knife or gun. The findings show that the marital assault rate increased as the number of stressors experienced during the year increased. This applies to assaults by both husbands and wives. Wives were less assaultive under normal conditions, but under high stress they were more assaultive than husbands. The theory that stress does not necessarily lead to assault was tested by introducing as controls a number of variables thought to play a part in establishing a linkage. Among these were growing up in a family in which one could observe and role-model violence, low attachment to the marriage, male dominance in the marriage, and isolation from informal networks which could help resolve or control marital disputes. The results were generally consistent with this theory. It is suggested that if conditions such as those represented by the control variables are present, stress is closely related to marital violence. If these conditions are not present, the relation between stress and assault is absent or minimal.

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In a number of papers (Straus, 1973: 1976: 1977), and most clearly in a forthcoming book (Straus, Gelles and Steinmetz, 1979), I have presented evidence that the family is the most violent institution, group, or setting that a typical citizen is likely to encounter. There are of course exceptions, such as the police or the army in time of war. But the typical citizen has a high probability of being violently assaulted only in his or her own home.

This can be made clear without, at this point, giving detailed statistics by pointing out that the Uniform Crime Reports give data on violent crimes in rates per hundred thousand. By contrast, in the book just mentioned, we found it more appropriate to report rates per hundred, than per hundred thousand or even per thousand.

THE PARADOX OF FAMILY VIOLENCE AND FAMILY STRESS

Family Violence

These data point to the first of many ironies or paradoxes about the family. In this case, the paradox is the fact that the family is also the group to which people look for love, support, and gentleness. So the hallmark of family life is both love and violence.

Much of the work of the family Violence Research Program at the University of New Hampshire has been designed to unravel that paradox. We are a long way from a full explanation. However, some progress has been made. This paper examines one of the several factors which go into that explanation: the link between stress and violence.

Stress in Families

Another irony of family life is the fact that although the family is often seen as a place where one can find respite from the tensions of the world, in fact, the family tends to be a group with an inherently high level of conflict and stress.

Richard Gelles and I have presented the theoretical case for this view in detail elsewhere (Gelles and Straus, 1979). For the moment, I will simply point out such things as the fact that, in addition to the normal differences and conflicts between two or more people, the family has built into its basic structure the battle of the sexes and the so-called "generation gap." Moreover, in addition to the stresses inherent in individual differences, age differences, and sex differences, there is the stress inherent in what is expected of families. For example, families are expected to provide adequate

food, clothing and shelter in a society which does not always give families the resources necessary to do this; or the expectation that families bring up healthy, well-adjusted, law-abiding and intelligent children who can get ahead in the world. The stress occurs because these traits, and the opportunity to get ahead, are all factors which are to a greater or lesser extent beyond the control of any given family.

The basic argument of the paper has probably been made clear by what has just been said: that a major cause of the high rate of violence in families is the high level of stress and conflict which characterizes families. Of course, this is only a plausible argument. Brenner (1976) for example, has shown a clear relationship between stress as indexed by unemployment rate and the rate of assault and homicide in the U.S., Canada, and Great Britain. But is it other members of their own family who are assaulted or murdered by the unemployed? This needs to be demonstrated with empirical data. Consequently, a major part of this paper is devoted to such an empirical study.

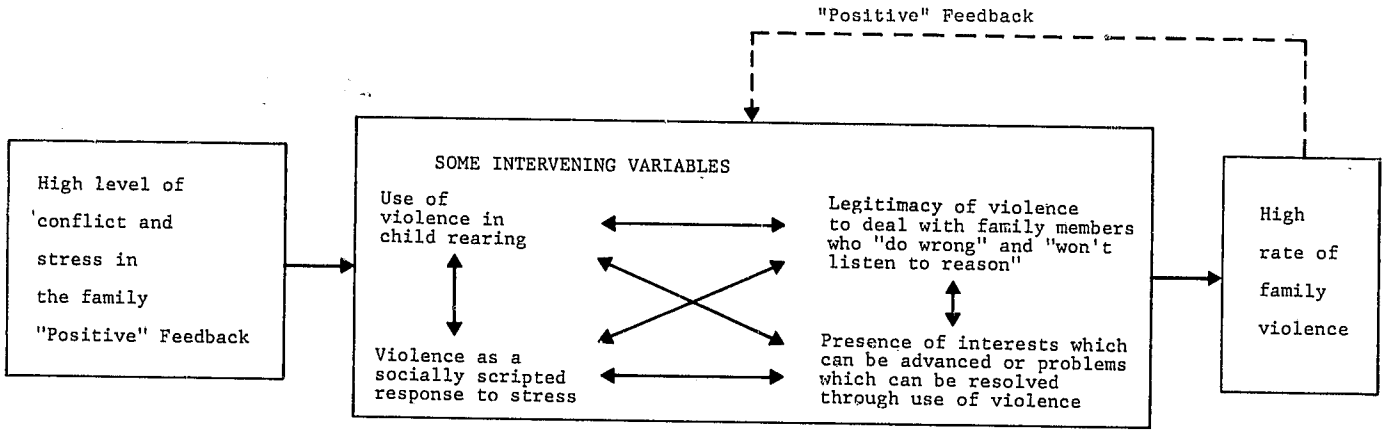
THE THEORETICAL MODEL

Although empirical findings will start with the relationship between the level of stress in families and the level of violence, I do not believe that stress directly causes violence. Violence is only one of many possible responses to stress. Among the alternatives are passivity, resignation, or just leaving. Academic departments, for example, are also stressful environments, but the rate of physical violence within such departments is close to zero.

The absence of any necessary link between stress and violence is shown in Brenner's data on the correlates of unemployment (1976). Unemployment is highly correlated not only with assault and homicide, but also with annual rates of hypertension, deaths from heart attacks, mental hospital admissions, and alcoholism. At the individual level Brown and Harris's (1978) study of a random sample of women in London includes highly reliable and valid data on life stresses. The interesting point is that they demonstrated a clear tendency for these women to respond to stress by depression rather than violence.

Mediating Variables

The center box of Figure 1 shows some of the other variables which must also be present to produce a correlation between stress and violence. For example, people are unlikely to respond to stress by violence unless this is part of the socially scripted method of dealing with stress and frustration--as it is in our society. So,



This diagram is labeled as a "partial model for two main reasons: The most obvious reason is that it includes only a sampling of the intervening variables which could be included in the center box. Second, the model omits negative feedback loops (i.e., deviation dampening process) which must be present. Without them the violence would escalate to the point where the system would self-destruct--as it sometimes, but not typically, does. See Straus, 1973 for a system model of family violence which includes negative feedback processes and other elements of a cybernetic system.

FIGURE 1
PARTIAL MODEL OF RELATIONSHIP BETWEEN STRESS AND FAMILY VIOLENCE

an important part of the model is the existence of norms or images of behavior which depict striking out at others when under stress as part of human nature.

However, these are very general behavioral scripts. They cannot explain family violence because they are part of the society's image of basic nature in all types of situations. It may be part of the explanation, but is not sufficient. To find the additional variables which will lead to a sufficient explanation one has to look at the nature of the family itself.

Normative Legitimacy of Family Violence

One very simple, but nonetheless important factor is that the family has different rules about violence than other groups. In an academic department or a factory, the basic rule is that no one can hit anyone else, no matter what they do wrong. A person can be a pest, an intolerable bore, negligent, incompetent, selfish, or unwilling to listen to reason. But that still does not give anyone the right to hit such a person. In the family, as I said, the situation is different. There, the basic rule is that if someone does wrong and won't listen to reason, violence is permissible, and sometimes even required. As one husband said about an incident in which his wife threw a coffee pot at him: "I was running around with other women--I deserved it."

I have heard statements like that from many husbands and wives. In another paper I have documented evidence in support of the idea that a marriage license is also a license to hit (Straus, 1976; 1979b). Still, that does not explain why or how such a norm arose or why it persists. Here again, there are a number of factors, one of which is shown in Figure 1: the use of violence in child rearing: that is, physical punishment.

Family Socialization in Violence

Physical punishment provides the society's basic training in violence, but of course, training which applies most directly to behavior in the family. At least some use of physical punishment is just about universal in American society, typically beginning in infancy (Steinmetz and Straus, 1974). What are the reasons for saying that learning about violence starts with physical punishment?

When physical punishment is used, several things can be expected to occur. Most obviously, the infant or child learns to do or not to do whatever the punishment is intended to teach; for example, to not pick up things from the ground and put them in his or her mouth. Less obvious, but equally or more important are three other lessons

which are so deeply learned that they become an integral part of one's personality and world view.

The first of these unintended consequences is the association of love with violence. Mommy and daddy are the first and usually the only ones to hit an infant. For most children this continues throughout childhood. The child therefore learns that those who love him or her the most, are also those who hit.

Second, since physical punishment is used to train the child or to teach about dangerous things to be avoided, it establishes the moral rightness of hitting other family members.

The third unintended consequence is the principle that when something is really important, it justifies the use of physical force.

Involuntary Nature of Family Membership

The last of the intervening variables which I have time to discuss is the simple fact that the family is only a semi-voluntary institution. This is most obvious in the case of children. They cannot leave, and parents cannot throw them out until a legally set age. So leaving--which is probably the most widely used and effective method of avoiding violence--is not available as an alternative in the parent-child aspect of the family.

To a considerable extent the same is true for the marital relationship. Ninety-four percent of the population marries, and anything done by this large percent of the population is not likely to be voluntary. No system of socialization is that effective. In fact, we all know the tremendous informal social pressures which are put on people to get married and stay married. Although divorces are now easier to get, the economic, social, and emotional barriers to breaking up a marital relationship are still extremely high. Even couples who are living together without a formal marriage find it difficult to end the relationship. In cities like Boston and New York, there is booming business in marriage counseling for the unmarried.

There are a number of other factors which should be included in Figure 1 and in this discussion. Those which have been discussed, however, should be sufficient to illustrate the theory which guided the analysis to be reported in this paper. 1/

By way of summary, the theory underlying this paper rejects the idea that humans have an innate drive toward aggression, or an innate tendency to respond to stress by aggression. Rather, a link between stress and aggression occurs only if the individual has learned an

"aggressive" response to stress, if such a response is a culturally recognized script for behavior under stress, and if the situation seems to be one which will produce rewards for aggression.

SAMPLE

The data used to examine this theory were obtained from a survey conducted in January and February of 1976. Interviews were conducted with a national area-probability sample of 2,143 adults. To be eligible for inclusion in the sample each respondent had to be between 18 and 70 years of age and living with a member of the opposite sex as a couple. However, the couple did not have to be formally married. A random half of the respondents were female and half were male. Each interview lasted approximately one hour and was completely anonymous. Furthermore, interviewers were of the language or racial group which was predominant in the sampling area for which they were responsible. Further details on the sample are given in Straus, Gelles and Steinmetz, 1979.

DEFINITION AND MEASURES OF STRESS

There has been a vast debate on the concept of stress (Mechanic, 1962; Lazarus, 1966; Levine and Scotch, 1967; McGrath, 1970; Scott and Howard, 1970; Selye, 1956). For example, one issue is whether stress is a property of the situation (such as illness, unemployment, family conflict, getting married, or getting promoted to a new job) or whether it is a subjective experience. For some people a new set of job responsibilities is experienced as stress, whereas for others, lack of such responsibility is a stress.

The definition of stress which I favor treats stress as a function of the interaction of the subjectively defined demands of a situation and the capabilities of an individual or group to respond to these demands. Stress exists when the subjectively experienced demands are inconsistent with response capabilities. 2/

In fact, there is a gap between the definition of stress given above and data I will actually report. This is because the methodology of this paper assumes that (1) some life event, such as having a child, produces a certain but unknown degree of demand on parents, (2) that on the average this is subjectively experienced as a demand, (3) that the capabilities of parents to respond to these demands will not always be sufficient, and (4) that the result is a certain level of stress. On the basis of these assumptions, it is then possible to investigate the relationship between such events and the level of violence in the family. Obviously, that leaves a large agenda for other investigators who will deal with this issue more adequately.

As indicated above, the aspect of stress which is measured in this study is limited to what are called "stressor stimuli." We administered a modified version of the Holmes and Rahe stressful life events scale (1967). Because of limited interview time, the scale was restricted to the 18 items listed in Table 1. [3] The scores on this scale ranged from zero to 18, with a mean of 2.4 and a standard deviation of 2.1. In addition to the overall stress score, we also considered different subgroupings of items. The subscores and their means are given in Table 2.

Sex Differences

The first thing to notice in Table 1 is that the experiences reported by the men and women respondents are quite similar. The exceptions are events for which men and women have different exposure. Thus, fewer women have paid employment, so it is not surprising that two to three times as many men as women experienced an occupationally related stress such as troubles with a boss or losing a job. [4] There are a few other interesting sex differences.

First, item 4 shows that twice as many men were arrested or convicted of a serious crime. An interesting sidelight is that to a non-criminologist, an annual arrest or conviction rate of two per hundred men seems quite high.

The only other item with a non-trivial difference is number 10, having had some type of sexual problem in the previous year. The rate for women is half again higher than the rate for men (13.1 versus 9.0).

Frequency of Different Stressors

The most frequently occurring stress among the 18 on the list is the death of someone close to the respondent (item 5). This happened to 40 percent of our respondents during the year we asked about. The next most frequent stress is closely related: item 9, a serious problem with the health or behavior of someone in the family. This occurred in the lives of about one out of four. For men, however, occupational stresses occurred more frequently. Item 2 shows that about 30 percent had a difficulty with their boss, and at the positive end about the same percentage had a large increase in their work responsibilities (item 15).

Table 1

PERCENT EXPERIENCING 18 LIFE STRESSES DURING PREVIOUS YEAR

LIFE EVENT	Male (N=960)	Female (N=1183)	Total (N=2143)
1. Troubles with the boss	25.8	9.9	17.0
2. Troubles with other people at work	31.4	11.2	20.3
3. Got laid off or fired from work	10.0	5.9	7.7
4. Got arrested or convicted of something serious	1.9	0.9	1.3
5. Death of sometone close	41.5	38.8	40.0
6. Foreclosure of a mortgate or loan	1.5	1.6	1.6
7. Being pregnant or having a child born	8.1	15.8	12.4
8. Serious sickness or injury	18.9	16.7	17.6
9. Serious problem with health or behavior of a family member	23.0	29.0	26.3
10. Sexual difficulties	9.0	13.1	11.6
11. In-law troubles	10.9	12.0	11.5
12. A lot worse off financially	15.8	12.1	13.7
13. Separated or divorced	3.6	2.6	3.0
14. Big increase in agruments with spouse/partner	8.1	9.4	8.8
15. Big increase in hrs. worked or job responsibilities	28.9	16.3	21.9
16. Moved to different neighborhood or town	17.2	16.4	16.8
17. Child kicked out of school or suspended	1.6	1.6	1.6
18. Child got caught doing something illegal	2.7	3.0	2.8

Table 2

MEAN SCORES ON STRESS INDEXES, BY SEX

INDEX	ITEMS	Mean Score*		
		Male (N=960)	Female (N=1183)	Total (N=2143)
Overall stress index	1 to 18	14.9	12.4	13.5
Occupational stress	1, 2, 15	28.7	12.4	19.7
Economic stress	3, 6, 12	9.0	6.5	7.6
Occ. and Econ. Stress	Occ. + Econ.			27.3
Interpersonal stress	5, 9, 11, 16	23.1	24.1	23.6
Health stress	7, 8	13.3	16.2	14.9
Spousal stress	10, 13, 14	7.1	8.2	7.7
Parental stress	17, 18	2.7	3.1	2.9
Nuclear family stress	Spousal + Parental	14.3	14.2	14.2

* The scores are in percentage form in order to make the scores on each index somewhat comparable. That is, each is a percentage of the maximum possible raw score. Thus, a mean of 14.9 on the Overall Stress Index means that this group averaged 14.9% of the 18 points which are possible; a mean of 28.7 on the Occupational Stress Index means that this group averaged 28.7% of the three points which are possible on this index. See Straus, 1979, Chapter 2 for further explanation of percentage standardization.

DEFINITION AND MEASURES OF VIOLENCE

I can deal more adequately--both conceptually and operationally--with violence. This is because violence has been the focus of my research on families for the past seven years, and is the main focus of the study I will be reporting. The definition of violence which underlies this research treats violence as one type of aggressive act. So I will first define aggression.

Aggression

Aggression is an act carried out with the intention of, or perceived as having the intention of, hurting another person.

Violence

Violence is an act carried out with the intention or perceived intention to cause physical hurt, pain, or injury to another person. Violence, as I am using that term, is therefore synonymous with "physical aggression."

Although this is the basic definition of violence used in studies undertaken as part of the Family Violence Research Program at the University of New Hampshire, it is usually necessary to take into account a number of other characteristics of the violent act. These include (1) the severity of the act, ranging from a slap to torture and murder; (2) whether it is "instrumental" to some other purpose such as forcing another to do or not to do something; or "expressive," i.e. an end in itself; (3) whether it is a culturally permitted or required act or one which runs counter to cultural norms (legitimate versus illegitimate or criminal violence).

To illustrate these three dimensions in relation to violence within the family, a child may be slapped mildly for some misdeed or beaten so severly that medical treatment is necessary; the spanking or beating may be instrumental to teaching the child not to run into a busy street, or it may be done out of exasperation and anger; and the child may be of an age when the legitimacy of parents hitting a child is virtually unquestioned, as compared to the general illegitimacy in our society of hitting an 18 year old child.

As in the case of the measurement of stress, there is a gap between what this set of definitions demands and what is available for analysis. The technique used is known as the Conflict Tactics Scales (Straus, 1979a). This measure consists of a check list of acts of physical violence. The respondent is asked about conflicts and difficulties with other family members, and then is asked if, in the course of the conflict, he or she did any of the items on the

list. The list starts with non-violent tactics, such as talking things over, and then proceeds on to verbally aggressive tactics, and finally to physical aggression--that is, violent acts.

The violent acts in turn were deliberately designed so as to permit a measure of the severity as well as the frequency of family violence. The list starts out with pushing, slapping, shoving and throwing things. These are what can be called the "ordinary" or "normal" violence of family life. It then goes on to kicking, biting, punching, hitting with an object, beating up, and using a knife or gun. This latter group of items are used to compute a measure of "severe violence" which is comparable to what social workers call child abuse, feminists would call wife-beating, and criminologists would call assaults.

It can be seen from this description of the Violence Indexes of the Conflict Tactics Scales that they take into account the dimensions of intent and severity. However, we do not have data on whether the act was primarily instrumental versus expressive, nor on whether the act was one which the members of that family believed to be illegitimate, or in the circumstances, legitimate.

Spouse Violence Rates

The first row of Table 3 shows that violence by a husband against his wife which was serious enough to be classified as wife-beating occurred at a rate of 3.8 per hundred couples. Violence by a wife serious enough to be classified as husband-beating occurred at an even higher rate: 4.6 per hundred couples. However, it is important to remember that these data are based on attacks, rather than on injuries produced. If one uses injuries as the criterion, then wife-beating would far outdistance husband-beating.5/

What proportion of these attacks were isolated incidents? Our data suggest that this was rarely the case. For those who experienced an assault, the medians in the last column of Table 3 show that it tended to happen about three times during the year. If the means are used as the measure of frequency of occurrence, the figure is much higher--about eight or nine times. But this is because of a relatively few couples at the extreme for whom such violence was just about a weekly event.

TABLE 3

INCIDENCE RATES FOR SEVERE VIOLENCE INDEX, OVERALL VIOLENCE INDEX, AND ITEMS MAKING UP THESE INDEXES

Conflict Tactics Scale Violence Indexes And Items	Rate Per 100 For Violence By:		Frequency*			
			Mean		Median	
	H	W	H	W	H	W
Wife-Beating and Husband-Beating (N to R)	3.8	4.6	8.0	8.9	2.4	3.0
Overall Violence Index (K to R)	12.1	11.6	8.8	10.1	2.5	3.0
K. Threw something at spouse	2.8	5.2	5.5	4.5	2.2	2.0
L. Pushed, grabbed, shoved spouse	10.7	8.3	4.2	4.6	2.0	2.1
M. Slapped spouse	5.1	4.6	4.2	3.5	1.6	1.9
N. Kicked, bit or hit with fist	2.4	3.1	4.8	4.8	1.9	2.3
O. Hit or tried to hit with something	2.2	3.0	4.5	7.4	2.0	3.8
P. Beat up spouse	1.1	0.6	5.5	3.9	1.7	1.4
Q. Threatened with knife or gun	0.4	0.6	4.6	3.1	1.8	2.0
R. Used knife or gun	0.3	0.2	5.3	1.8	1.5	1.5

*For those who engaged in each act, i.e., omits those with scores of zero.

STRESSFUL LIFE EVENTS AND ASSAULT BETWEEN SPOUSES

For purposes of this analysis, the Stress Index was transferred to Z Scores and grouped into categories of half a Z Score. Therefore, in Figure 2, each horizontal axis category indicates the families who fall within a band that is half a standard deviation wide.

The data plotted in Figure 2 clearly show that the higher the stress score the higher the rate of assault between husband and wife. For the wives (solid line) the curve approximately fits power function. For the husbands, the relationship shows a general upward trend, but is irregular. 6/

Both the smooth shape of the curve, and the fact that the line plotted for the women is above the line for the men at the high stress end of the graph, suggest that stress has more effect on wives than on husbands. At the low end of the scale, women in the -1.0 to -1.4 stress group have an assault rate which is about half that of the men in this group (1.1 per hundred versus 2.2 for the men). But at the high stress end of the scale, women in the +1.6 to +2.0 and +2.1 and over categories have assault rates which are 150 percent and 50 percent greater than the rates for the husbands who experienced this much stress. It seems that in the absence of stress women are less violent to their spouse than are men, but under stressful conditions women are more violent.

An analysis identical to that in Figure 2 was done, except that that the dependent variable was not limited to the types of severely violent acts used in Figure 2; that is, the measure included pushing, slapping, shoving, and throwing things. Except for the fact that the rates are much higher--they start a five per hundred and range up to 48 per hundred--the results are very similar.

The importance of this similarity is that it helps establish a connection which is extremely important for understanding serious assaults: over and over in our research, we find a clear connection between the "ordinary" violence of family life, such as spanking children or pushing or slapping a spouse, and serious violence such as child abuse and wife-beating. Actually, the connection goes deeper. Verbal aggression is also part of this network of relationships. People who hurt another family member verbally are also the ones most likely to hurt them physically. Moreover, the same set of causal factors applies to both the milder forms of violence and acts of violence that are serious enough to be considered child abuse or an assault on a spouse. The similarity of the relationship between stress and the overall violence index with the relationship between stress and serious assaults is but one of many such examples found for this sample (Straus, Gelles, and Steinmetz, 1979).

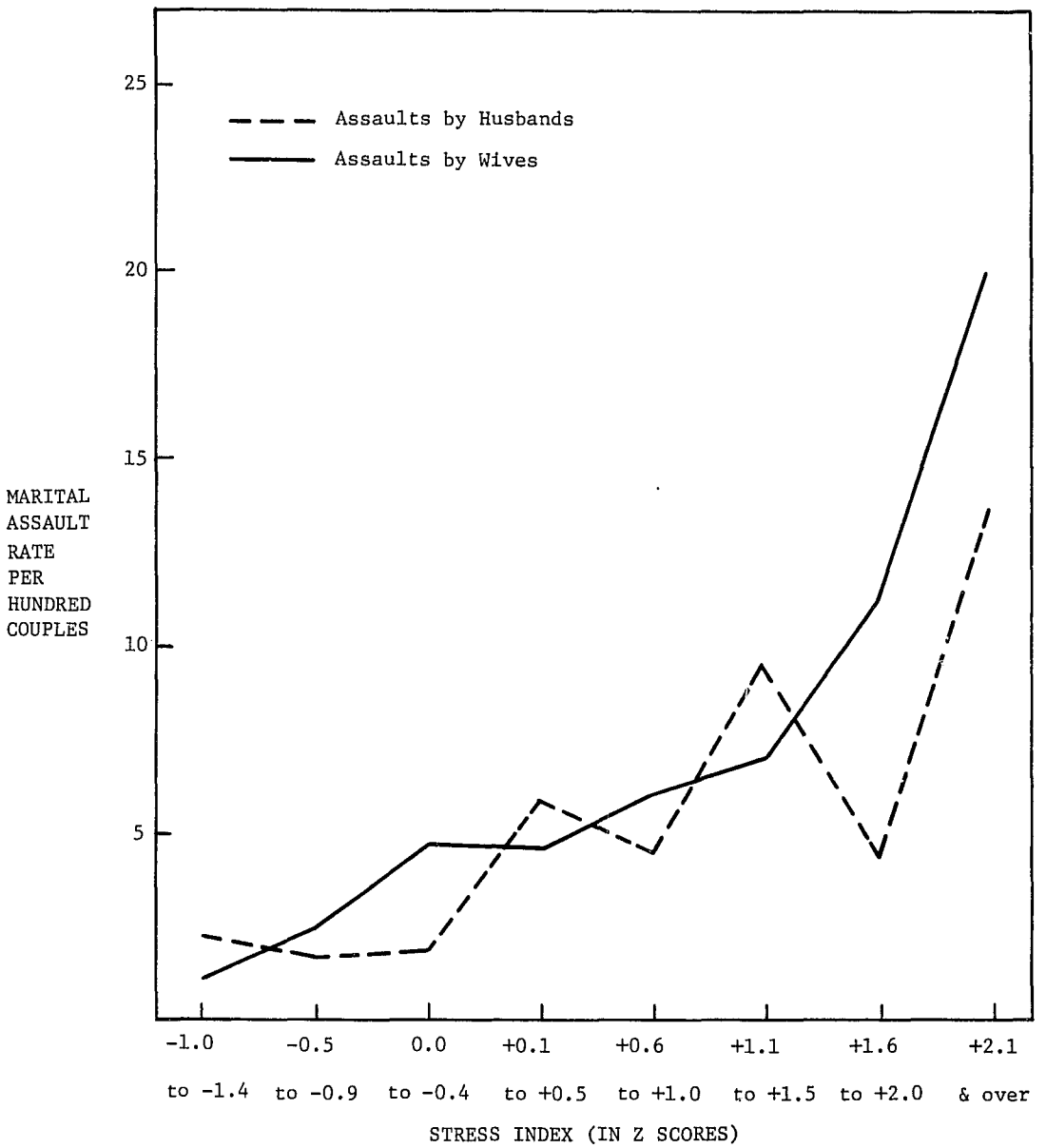


FIGURE 2
MARITAL ASSAULT RATE BY STRESS INDEX SCORE

TYPES OF STRESSORS AND ASSAULTS

The analyses just reported were also carried out using each of the stress subscores listed in Table 2 as the independent variable. In each case, as the amount of stress increased, so did the assault rate. These relationships were strongest for the "Spousal Stress" and the "Economic Plus Occupational Stress" subscores.

The fact that a very strong relationship was found between stress in the spousal relationship and assault on a spouse is what might be expected because in such cases the assaulter is lashing out at what he or she may believe is the cause of the stress. The relationship between economic and occupational stress and assault is therefore better evidence that stress per se is associated with violence. This relationship is shown in Figure 3. 7/

FACTORS LINKING STRESS AND WIFE-BEATING

Interesting as are the findings presented so far, they do not reflect the theoretical model sketched at the beginning of this paper in Figure 1. One might even say that the data just presented distort the situation because the graphs tend to draw attention away from a very important fact: most of the couples in this sample who were subject to a high degree of stress were NOT violent.

A critical question is brought to light by this fact. What accounts for the fact that some people respond to stress by violence whereas others do not? Part of the answer to that question was suggested in the center box of Figure 1. The variables included there were selected to illustrate the theory. They were not intended to be a complete list, either of what is theoretically important or a list of the variables available for this sample. The available data actually cover three of the four variables listed in Figure 1 plus a number of other variables.

The analysis carried out to take into account these intervening variables focuses on assaults by husbands on their wives. It is restricted to this one aspect of intrafamily assault because, along with child abuse, it is the most serious problem aspect of intrafamily violence, and because of limitations imposed by the time available to prepare this paper and by the length of the paper.

The analysis started by distinguishing husbands in the sample who experienced none of the stressful events in the past year (N=139) and those in the high quartile of the index (N=258). Each of these groups was further divided into those who were in the high quartile of each intervening variable, versus those in the low quartile. This enables

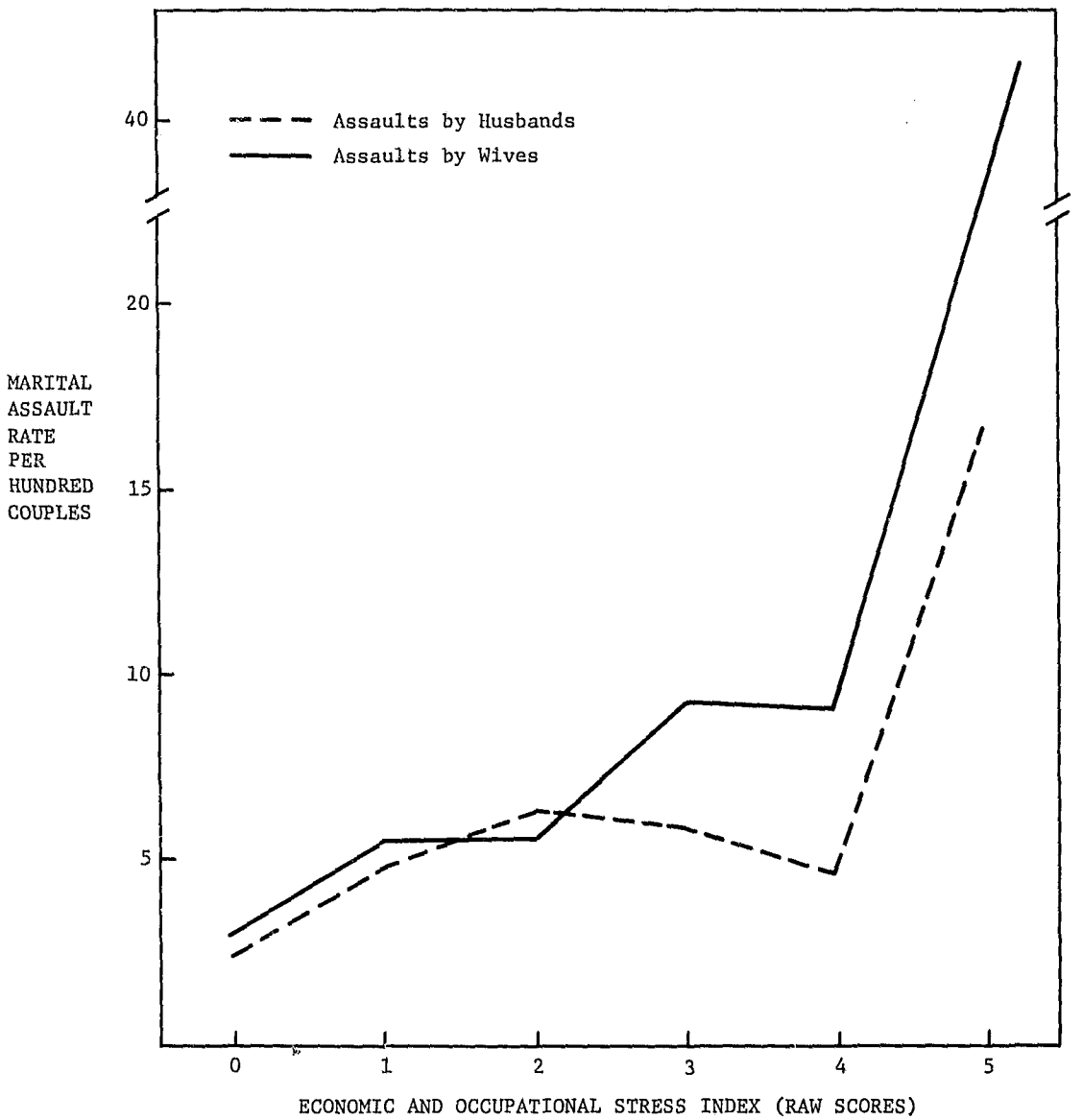


FIGURE 3
MARITAL ASSAULT RATE BY ECONOMIC PLUS OCCUPATIONAL STRESS INDEX

us to see if the intervening variable was, as specified in the theoretical model, necessary for life stresses to result in violence. If the theory is correct, the men who are high in respect to an intervening variable will have a high rate of violence, whereas the men in the low category will not be more violent than the sample as a whole, despite the fact that they were under just as much stress during the year as the others.

Socialization For Violence

The first row of Table 4 runs directly contrary to the theory being examined. It shows that the men who were physically punished the most by their mother when they were teenagers were slightly less violent under stress than the men who were not or only rarely hit at this age by their mother. On the other hand, having been physically punished on more than just a rare occasion by a father does relate to assaulting a wife. Husbands whose father hit them the most have an assault rate against their wives which is slightly higher than do husbands who were under equally high stress that year, but who did not experience this much violence directed against them as a teenager. The difference between the effect of having been hit by one's mother versus by one's father suggests that violence by the father against a teenage boy is a more influential role model for violent behavior which the son will later display under stress.

The next two rows of Table 4 refer to violence between the parents of the husbands in this sample. These two rows show large differences between husbands who are the sons of parents who engaged in physical fights and those who did not. The assault rate by husbands whose own father had hit their mother was 216 percent higher than the rate for the men whose fathers never hit their mother (17.1 per 100 vs 5.4). Surprisingly, the largest difference of all is in the much greater assault rate by husbands who had grown up in families where their mother had hit their father. This contradicts the idea of the same sex parent being a more influential role model. Whatever the intervening process, however, Section A of Table 4 shows that the men who assaulted their wives were exposed to more family violence as teenagers than were the men who were not violent despite an equally high level of stress.

Legitimacy of Family Violence

Section B of Table 4 reports "semantic differential" scores (Osgood, Suci and Tannenbaum, 1957) in response to questions about slapping a child and slapping one's husband or wife. Each score is made up by combining the ratings for how "necessary," "normal," and "good" the respondent rated slapping.

TABLE 4

EFFECT OF INTERVENING VARIABLES ON THE INCIDENCE OF ASSAULT

BY HUSBANDS EXPERIENCING HIGH STRESS

Intervening Variable	Assault Rate Per 100 Husbands when Intervening Variable was:		N*	
	Low	High	Low	High
A. Childhood Experience With Violence				
Physical punish. after age 12 by mother (0 vs 4+ per yr)	7.1	6.7	85	89
Physical punish. after age 12 by father (0 vs 4+ per yr)	7.4	8.4	81	83
Husband's father hit his mother (0 vs 1+ per yr)	5.4	17.1	167	41
Husband's mother hit his father (0 vs 1+ per yr)	4.6	23.5	176	34
B. Legitimacy of Family Violence				
Approval of parents slapping a 12 year old (0 vs high ¼)	5.9	9.9	34	71
Approval of slapping a spouse (0 vs any approval)	2.7	15.0	150	100
C. Marital Satisfaction and Importance				
Marital Satisfaction Index (low vs high quartile)	12.3	4.9	73	61
Marriage less important to husb. than to wife = high	5.9	11.7	17	34
D. Socioeconomic Status				
Education	6.1	5.4	49	56
Husband a blue-collar worker = low	9.2	5.4	284	202*
Income (low = $9,000, high = $22,500)	16.4	3.5	122	113*
E. Marital Power				
Power Norm Index (high = husb. should have final say)	4.2	16.3	71	55
Decision Power Index (high = husb. has final say)	5.2	16.1	58	62
F. Social Integration				
Organizational Participation Index (0 vs 11+)	10.5	1.7	86	60
Religious service attendance (0-1/yr vs weekly)	8.9	5.4	79	56
Relatives living near (0-2 vs 13+)	5.7	11.9	124	118*

*The N's vary because, even though the intent was for the high and low groups to be the upper and lower quartiles, this was not always possible. In the case of occupational class, for example, the comparison is between a dichotomous nominal variable. In the case of continuous variables, we sometimes wanted to preserve the intrinsic meaning of a score category, such as those who with a score of zero, even though this might be more or less 1/4 of the sample. Another factor causing the N's to vary is that the division into quartiles was based on the distribution for the entire sample of 2,143, rather than just the high stress subgroup analyzed in this table. Finally, there are three variables for which the data was obtained from the wife as well as the husband (husband's occupation, family income, and relatives living nearby). The N's for these variables are roughly double those for the other variables because they are based on the entire sample, rather than only on those families where the husband was the respondent.

The first row of Section B shows that husbands who approved of slapping a child had a 68 percent greater rate of assaulting their wives than did the husbands with a score of zero on this index. When it comes to approval of slapping a spouse, there is a 456 percent difference in the predicted direction. These findings are consistent with the theoretical model asserting that the relation between stress and violence is a socially mediated process, rather than a direct biologically determined relationship. However, since these are cross sectional data, the findings do not prove the correctness of the model. It is also quite plausible to interpret the greater assault rate by men who approve of violence as an after-the-fact justification. Except for a few variables which clearly occurred at a previous time, such as the ones on violence experienced as a child, this caution applies to most of the findings to be reported.

Marital Satisfaction and Importance

The first row of Section C compares men who were low in marital satisfaction with men in the high quartile. The low quartile men had a 151 percent higher assault rate. A similar difference is shown by comparing men who rated their marriages as a less important part of their lives than the marriage played in the life of their wives. Of course, as noted above, these differences, like a number of others to be reported in this paper, could reflect the effect of marital violence rather than being a cause. Only a longitudinal study can adequately sort out this critical issue. On the basis of this study, it can only be said that the findings are not inconsistent with the idea that men under stress are more likely to be violent if they do not find the marriage a rewarding and important part of their lives.

Socioeconomic Status

Three aspects of socioeconomic status are examined in Section D of Table 4. The first of these, the educational level of the couple, shows findings which many will find surprising. The husbands in the high quartile of education were only slightly less violent than those in the low quartile. This is inconsistent with the widely held view that less educated people are more violent. Actually, a careful review of the available studies fails to support this widespread idea (Straus, 1979c). A number of studies (including an analysis of this sample, Finkelhor, 1977) suggest there is little or no difference in aggression and violence according to education.

On the other hand, when it comes to indicators of present socioeconomic position, the low groups are, as expected, more violent. The second row of Section D, for example, shows that the assault rate of blue-collar husbands is 70 percent greater than the assault rate of the white-collar employed husbands. If the combined income

of the couple was $9,000 or less, the rate of assault by husbands on their wives was 368 percent higher than in families with a more adequate income (16.4 per hundred versus 3.5 per hundred).

What could account for the sharply different findings for education as compared to occupation and income? One fairly straightforward possibility is that low income and low status occupations are indirect indicators of even more stress than is measured by the stress index. Low or high education, on the other hand, does not necessarily mean that the couple is currently in an economically bad position, such as is indicated by a total family income of $9,000 and under.

Marital Power

One of the most important factors accounting for the high rate of marital violence is the use of force by men as the "ultimate resource" to back up their position as "head" of the family (Allen and Straus, 1979; Goode, 1971; Straus, 1976, 1977). Section E provides evidence that this may be part of the explanation for why some men assault their wives when under stress and others do not.

The first row of Section E shows that the assault rate of husbands who feel that husbands should have the final say in most family decisions is 288 percent higher than it is for husbands who are not committed to such male dominance norms. The second row suggests that when this is translated into actual decision power, the differences are almost as great. The husbands who actually did have the final say in most family decisions had an assault rate of 16.1 per hundred as compared to 5.2 for the husbands who were also under high stress but shared decisions with their wives.

Social Integration and Isolation

The last set of intervening factors included in this paper explore the theory that violence will be higher in the absence of a network of personal ties. Such ties can provide help in dealing with the stresses of life, and perhaps intervene when disputes within the family threaten to become violent.

The first row of Section F shows that men who belonged to no organizations (such as clubs, lodges, business or professional organizations, or unions) had a higher rate of assault than did the men who participated in many such organizations. The same applies to men who attended religious services as compared to men who rarely or never did.

The third row of Section F, however, shows opposite results. Couples who had many relatives living within an hour's travel time had a higher rate of assault than did couples with few relatives nearby. This finding is not necessarily inconsistent with social network theory. The usual formulation of that theory assumes that the network will be "pro-social." Usually, that is a reasonable assumption. However, a social network can also support "anti-social" behavior. That is the essence of the "differential association" theory of criminal behavior. In respect to the family, Bott (1957) and others have shown that involvement in a closed network helps maintain sexually segregated family roles, whereas couples not tied in to such networks tend to have a more equal and shared task type of family organization. In the present case, the assumption that the kin network will be opposed to violence is not necessarily correct. For example, a number of women indicated that when they left their husband because of a violent attack, their mothers' responses included such things as urging her to deal with the situation by being a better housekeeper, a better sex partner, by just avoiding him, etc. In some cases, the advise was "you just have to put up with it for the sake of the kids--that's what I did."

SUMMARY AND CONCLUSIONS

This paper was designed to determine the extent to which stressful life experiences are associated with assault between husbands and wives, and to explore the reasons for such an association. The data used to answer these questions come from a nationally representative sample of 2,143 American couples. Stress was measured by an instrument patterned after the Holmes and Rahe scale. It consisted of a list of 18 stressful events which could have occurred during the year covered by the survey. Assault was measured by the severe violence index of the family Conflict Tactics Scales. This consists of whether any of the following violent acts had occurred in the course of a family dispute during the past year: punching, kicking, biting, hitting with an object, beating up, and using a knife or gun.

The findings show that respondents who experienced none of the 18 stresses in the index had the lowest rate of assault. This applies to assaults by wives as well as by husbands. As the number of stressors experienced during the year increased, so did the assault rate. This was most clear in the case of the wives. Wives with a stress score of zero had a lower rate of assault on their husbands as compared to the assaults by husbands with a stress score of zero. But the assault rate of wives climbed steadily with each increment of stress, and gradually became greater than the assault rate of the husbands. Thus, although wives were less assaultive under normal conditions, under stress they were more assaultive than the husbands.

The second part of the analysis was based on the theory that stress by itself does not necessarily lead to violence. Rather, it was assumed that other factors must be present. Several such factors were examined by focusing on men who were in the top quartile in stresses experienced during the year. These men were divided into low and high groups on the basis of variables which might account for the correlation between stress and violence. It was assumed that, if the theory is correct, the men who were high in the presumed intervening variable should have a high assault rate, whereas the men in the low category on these variables should not be more assaultive than the sample as a whole, despite the fact that they were under as much stress during the year as were the other high-stress subgroup of men.

The results were generally consistent with this theory. They suggest the following conclusions: (1) Physical punishment by fathers, and observing parents hit each other train men to respond to stress by violence. (2) Men who assault their wives believe that physical punishment of children and slapping a spouse are appropriate behavior. Their early experience with violence therefore seems to have carried over into their present normative stance. However, a longitudinal study is needed to establish whether this is actually the causal direction. (3) Men under stress are more likely to assault their wives if the marriage is not an important and rewarding part of their life. (4) Education does not affect the link between stress and violence. However, low income and low status occupation do, perhaps because these are indicators of additional stresses. (5) Men who believe that husbands should be the dominant person in a marriage, and expecially husbands who have actually achieved such a power position, had assault rates from one and a half to three times higher than the men without such values who were also under stress. (6) Men who were socially isolated (in the sense of not participating in unions, clubs, or other organizations) had higher rates of assault on their wives, whereas men who were involved in supportive networks of this type, only rarely assaulted their wives despite being under extremely high stress.

Of course, conclusions such as these, although consistent with the findings reported in this paper, are not proved by the findings. Many of the findings are open to other equally plausible interpretations, particularly as to causal direction. The question of causal direction can only be adequately dealt with by a longitudinal study. In the absence of such prospective data, the following conclusions must be regarded only as what the study suggests about the etiology of intra-family violence.

We assume that human beings have an inherent capacity for violence, just as they have an inherent capacity for doing algebra. This capacity is translated into actually solving an equation, or actually assaulting a spouse, if one has learned to respond to scientific or

technical problems by using mathematics, or learned to respond to stress and family problems by using violence. Even with such training, violence is not an automatic response to stress, nor algebra to a scientific problem. One also has to believe that the problem is amenable to a mathematical solution or to a violent solution. The findings presented in this paper show that violence tends to be high when these conditions are present; for example, among those whose childhood experiences taught them the use of violence and whose present need to dominate the marriage provides a situation which is likely to yield to violence. If conditions such as these are present, stress is related to violence. If these conditions are not present, the relation between stress and violence is absent or minimal.

FOOTNOTES

1. Figure 1 is intended to illustrate the general nature of the theory, rather than to list all the variables which need to be taken into account. There are also two aspects of the model which are included simply to alert readers to their importance, but which will not figure in the empirical analysis. First, this paper will not deal with feedback processes. Second, within the center box illustrating some of the intervening variables, the arrows show that each of these variables is related to the others. They are a mutually supporting system, and interaction effects are no doubt also present. However, in this paper, these and other intervening variables will be dealt with one by one.

2. This can be demands in excess of capabilities or a low level of demand relative to response capabilities. A more adequate formulation of stress includes a number of other elements. For example, Farrington (1979) has identified six components which need to be taken into account in research on stress: the stressor stimulus, objective demands, subjective demands, response capabilities, choice of response, and stress level. Important as are these six components, they will be ignored in this paper for the simple reason that there is no way to investigate them with the data I have available.

3. The stress index used in this study actually departs in other ways than length from the Holmes and Rahe scale.

   (1) One of the criteria used to select items from the larger original set was to eliminate stresses which have a "positive cathexis." This was done on the basis of methodological studies which show that it is the "negative" items which account for most of the relationship between scores on the stress index and other variables (Gersten, Langner, Eisenberg and Orzek, 1974; Paykel, 1974).

   (2) We modified some items and added some which are not in the Holmes and Rahe scale to secure a set of stressors which seemed best for the purpose of this research.

   (3) The Holmes and Rahe weights were not used in computing the index score for each respondent. This was based on research which found that the weighting makes little difference in the validity of scales of this type (Straus, and Kumagai, 1979), and of the Holmes and Rahe scale specifically (Hotaling, Atwell and Linsky, 1979).

An important limitation which this stress index shares with the Holmes and Rahe index is that one does not know the time distribution of the stressful events. At one extreme, a person who experienced four of the stressors during the year could have had them spread out over the year, or at the other extreme, all four could have occurred at roughly the same time.

4. The sex difference in item 7 (being pregnant or having a child) is probably due to a misunderstanding of the question by the male respondents. It was meant to apply to the men as well as the women in the sample, in the sense of whether the wife was pregnant or had a child in the last year.

5. Although these findings show high rates of violence by wives, this should not divert attention from the need to give primary attention to wives as victims as the immediate focus of social policy. There are a number of reasons for this:

   (a) A validity study carried out in preparation for this research (Bulcroft and Straus, 1975) shows that underreporting of violence is greater for violence by husbands than it is for violence by wives. This is probably because the use of physical force is so much a part of the male way of life that it is typically not the dramatic and often traumatic event that the same act of violence is for a woman. To be violent is not unmasculine. But to be physically violent is unfeminine according to contemporary American standards. Consequently, if it were possible to allow for this difference in reporting rates, it is likely that, even in simple numerical terms, wife-beating would be the more severe problem.

   (b) Even if one does not take into account this difference in underreporting, the data in Table 3 show that husbands have higher rates in the most dangerous and injurious forms of violence (beating up and using a knife or gun).

   (c) Table 1 also shows that when violent acts are committed by a husband, they are repeated more often than is the case for wives.

   (d) These data do not tell us what proportion of the violent acts by wives were in response to blows initiated by husbands. Wolfgang's data on husband-wife homicides (1957) suggest that this is an important factor.

   (e) The greater physical strength of men makes it more likely that a woman will be seriously injured when beaten up by her husband than the reverse.

(f) A disproportionately large number of attacks by husbands seem to occur when the wife is pregnant (Gelles, 1975) thus posing a danger to the as yet unborn child.

(g) Women are locked into marriage to a much greater extent than men. Because of a variety of economic and social constraints, they often have no alternative to putting up with beatings by their husband (Gelles, 1976; Martin, 1976; Straus, 1976, 1977).

6. The number of husbands and wives on which each of the rates in Figure 2 is based are: -1.0 = 361 and 365; -0.5 = 459 and 460; 0.0 = 414 and 415; +0.1 = 304 and 303; +0.6 = 224 and 218; +1.1 = 128 and 129; +1.6 = 45 and 45; +2.1 = 103 and 105.

7. The number of husbands and wives on which each of the rates in Figure 3 is based are: 0 = 1053 and 1058; 1 = 544 and 548; 2 = 258 and 256; 3 = 135 and 130; 4 = 43 and 44; 5 = 12 and 12.

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CROWDING, STRESS AND CRIME

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As everyone knows, crime, and in particular serious crime, is much more likely to occur in cities than in smaller communities. In recent years, as the population of the suburbs has grown, crime rate there has also increased. This association between crime rate and population has caused many people to believe that crowding is one cause of crime. The argument generally goes that living under conditions of high population density is stressful and unpleasant, that this arouses aggressive feelings, and that these in turn are expressed in criminal behavior. Another line of reasoning is that the stress caused by crowding results in mental disturbance of all kinds, and that this produces crime. Whatever the specific links, crowding is often thought to lead to crime. Yet, a considerable amount of careful research indicates that both the premise and conclusion are false. Crowding is not generally stressful, it does not produce mental disturbance, and it is not a cause of criminal behavior.

Animal Research

One reason why many psychologists and sociologists used to assume that crowding had negative effects on people was that work by biologists seemed to show that crowding was bad for other animals. Although this work has only minor relevance to people, it may be helpful to review it briefly in order to demonstrate that it has often been misinterpreted. Research by Calhoun (1962), Snyder (1968), Southwick (1955), Terman (1974) and others has shown that animals (usually rats or mice) that are placed in enclosed spaces do not reproduce normally. Instead of growing at a usual rate, the populations of such colonies stop increasing at some point and then, typically, decline sharply. The point at which this occurs is well below the level that the cage should be able to support. The decline in population is caused by a rather sudden cessation of conceptions and a dramatic increase in infant mortality among the few animals that are born. In addition, there is some evidence that animals in these colonies are more aggressive than usual, and undergo certain physiological changes that indicate a stress reaction (e.g., enlarged adrenal glands). It is these studies that have sometimes been interpreted as indicating negative effects of crowding. And some authors (especially Calhoun) have generalized the findings to humans, claiming that crowding will have similar effects on them.

While these results are well established and highly replicable, the interpretation of them appears to be incorrect. Additional research indicates that the effects are not due to the amount of space available--that is, are not due to crowding per se, but to other factors entirely. For example, Terman (1974) and Lloyd (1978) found that the level that the population reached varied enormously from one colony to another, even though they had the identical amount of space. In Terman's work some colonies peaked at a population of only six animals, while others reached more than 60; and in Lloyd's experiments, the range was from 16 to 105. In other words, the maximum density achieved in the cages varied by a factor of as much as ten. Moreover, both series of studies showed that once the population had stopped growing, doubling the size of the cage (i.e. providing twice as much space) had no effect. Clearly, being enclosed produces dramatic negative effects on these animals; but the size of the cage is largely irrelevant.

Similarly, various experiments have demonstrated that the physiological effects are independent of density. In one elegant study, Christian (1955) compared animals in groups of ten to those in individual cages, and also varied the size of the cages by a factor of 42. He found that all grouped animals had enlarged adrenal glands, but that the size of the cage had no effect. Those in small cages, with very high density, had no larger adrenals than those in cages 42 times as large. The research by Terman cited above also found no relationship between density and any physiological changes (Albertson, et al., 1975; Sung, et al., 1977; Terman, 1973).

A recent Hudson Symposium on biosocial mechanisms of population regulation was attended by many of the leading population biologists, including Christian, Davis, Lloyd, Southwick, Tamarin, and Terman, as well as psychologists and representatives from other fields. The one statement all of the biologists agreed on was that crowding, population density per se, has no simple effects on population regulation or anything else. Thus, to the extent that this evidence is relevant to our concerns, we can discount the notion that crowding is harmful to other animals.

Human Research

Of course, our major source of evidence regarding how crowding affects people must be research that deals with people. No matter what was discovered in work with rats, mice, voles, monkeys and other creatures, we can rely only on findings that involve humans. Having stated the conclusions in advance, let me review some of this rather extensive literature.

There are two main sources of data: survey studies involving large numbers of people in natural settings, and experimental and

observational studies involving relatively few people but in more controlled situations. The former is more relevant to our present concern. The typical survey study obtains measures of the population density of an area or of the dwellings in that area and looks for associations with various measures of pathology, including infant and adult mortality, incidence of certain diseases, mental illness, adult crime and juvenile delinquency. For purposes of this paper, I shall refer mainly to the crime and delinquency measures, but the same findings hold for all of these measures.

Several studies have performed these kinds of analyses using United States metropolitan areas (SMSAs) as the unit of analysis (Freedman et al., unpublished; Pressman and Carol, 1971). Other work compared various cities (Booth and Welch, 1973). The finding of this work is quite straightforward. All of the studies find small but consistent correlations between density and crime. That is, more density populated areas have higher rates of crime than do areas of lower density. However, and this is the important point, once basic social factors such as income and ethnicity are controlled, there is no remaining relationship between density and crime rate. To give an example: in our study, there was a correlation of .30 between density and overall crime rate. This accounts for less than ten percent of the variation in crime rate, but is nonetheless substantial. On the other hand, a step-wise regression analysis indicated that once income and ethnicity were equated, density contributed nothing to the explanation of crime - it was unrelated to overall crime rate and to any of the individual crimes considered.

In addition, if we think that density affects crime rate, presumably it would be because those who live under high density experience stress, respond with aggressive feelings and these are translated into a greater tendency to commit a crime. If this were true, we would expect the relationship with density to be especially high for crimes of violence (murder, rape and assault) and relatively low for mainly economic crimes such as robbery, burglary and auto theft. Yet, exactly the reverse is true. With no other factors controlled, density has sizeable correlations with robbery and car theft and a somewhat smaller one with burglary, but no appreciable correlations with any of the violent crimes (correlations range from .06 to .12). In other words, even with important social factors ignored, there is no indication that crowding has anything to do with violent crimes. The only relationships are with crimes against property, and they are explained largely by economic factors.

While both impressive and consistent, this work on metropolitan areas and cities may be criticized because the units of analysis are too large. The communities differ so much among themselves, share so many different environmental and cultural characteristics, that any

comparisons among them may be meaningless. Also, there is the possibility that the areas are too heterogeneous, containing as they do both inner city (high density) areas and outer-city (low density) areas. Perhaps density does operate, but only under certain circumstances or within certain ranges. Accordingly, it is important to look at research that dealt with neighborhoods within cities, which are relatively homogenous and in which all residents are exposed to at least some common features.

Fortunately, there are a number of studies of this sort, dealing with Honolulu, Chicago, New York, and Hong Kong. While this hardly constitutes a cross-section of all of the cities in the world, it does provide some range in terms of density levels, culture, and other factors that might be important. The results of this work are not perfectly consistent, though it provides no good reason to believe that density is associated with crime.

As usual, the correlations between crime rate and density tend to be positive when no other factors are controlled, but the crucial question is whether these relationships remain after areas are equated on income and other social factors. Schmitt (1966) found that high density in the home was correlated with high crime rate in Honolulu even after income and education were controlled, but Freedman et al., (1975) found no such relationship in New York City, nor did Levy and Herzog (1974) in the Netherlands; Galle et al., (1972) in Chicago or Winsborough (1965) also in Chicago. In addition, Schmitt (1966), Galle et al., (1972), and Freedman et al., (1975) agree in finding no relationship between density per acre in a neighborhood and crime, though Booth and Welch (1973) and Levy and Herzog (1974) found weak relationships. Taking all of these studies at face value, it seems clear that there is no convincing evidence to indicate that high density, either in the home or in the area is related to crime rate.

On the other hand, because the results are somewhat inconsistent, and because the issue is both complex and important, let us consider the problem in more detail. First, I should point out that the relationships that are found tend to be very small. At most, ten percent of the variance is explained by density when other factors are controlled. Second, many of the studies that report relationships of one type, look for and do not find other relationships. That is, no study has found consistent relationships between all measures of density taken and crime rate. When such relationships are found, they are sometimes with one measure, sometimes another. Third, there is no direct evidence to support any link between density and stress, which is supposed to underlie the relationship with crime. We shall return to this later.

I should point out that the statistical controls that have been used are often difficult to interpret. The typical procedure has been

to perform step-wise multiple regressions or covariance analyses. These are standard techniques used to discover whether two factors are associated over and above the association due to some third factor. However, when two factors are themselves correlated, as is the case with density and income, it is difficult to know which is more basic than the other. That is, if density and income are correlated, and both are also correlated with crime rate, how can we tell whether it is income that has the "true" association with crime, with density being incidental, or whether the true relationship is between density and crime? One method of making this decision is to see which factor (income or density) explains more variance once the other is controlled. If after density is controlled, income is still correlated with crime rate, whereas with income controlled, there is no remaining relationship between density and crime, we assume that income is more basic. When this procedure is employed, in almost all instances, income appears to be more important than density, as we would certainly imagine intuitively. Nevertheless, these statistical procedures remain somewhat inconclusive.

One of our studies (Freedman et al., 1975) provides an analysis that controls income without having to resort to statistical devices. There are enough separate health areas in New York City that it was possible to divide them into groups according to income levels. We then looked at the density-crime relationship within income level. In other words, we asked whether among just the poorest neighborhoods, those with the highest densities produce more crime than those with lower densities, and similarly for other income levels. We found that density and crime were not appreciably associated even among the low income groups (actually there was a slight inverse relationship - higher density leading to lower crime). It should be noted that the range of densities was considerable so that we were not dealing with a restricted range. Thus, without any fancy statistical controls, we can say with some confidence that, at least in New York City, those poor people who live under high density do not commit more crimes than those who live under low density, and the same is true of all other income groups.

One final comment about these studies. There is little question that the measures of crime rate are far from perfect. As everyone knows, crime reporting, crime definitions, and so on vary greatly from place to place and from neighborhood to neighborhood. The measures of density are quite good, but we cannot have great confidence in our crime measures. Nevertheless, the measures are good enough to produce very strong and consistent correlations with variables such as income and ethnicity. Thus, the lack of associations with density cannot be due simply to poor measures. Perhaps more sensitive measures would indicate relationships that have not been found, but this seems unlikely given that the current studies have been able to explain very

high percentages of the variance using the available measures. Crime reporting may be quite inaccurate, but it seems to be good enough to give a fairly accurate estimate of the rates of crime on a relative basis though probably not on an absolute basis. In any case, it seems unlikely that any biases that enter into crime statistics are systematically related to measures of density (though they probably are related to measures of income and ethnicity).

To sum up, the evidence from large scale studies indicates no consistent relationship between any measure of density and crime or juvenile delinquency. A few studies have reported small associations, but the majority have not; and those that did find appreciable correlations on one measure, generally failed to find them on another. Thus, this line of research suggests either that density per se is unrelated to crime rate, or that the relationship is so small or so complex as to be unimportant for most purposes.

Because this conclusion seems to run counter to many people's intuitions, let me give an additional piece of information that might make it more plausible. Over the past thirty years, the population density in our urban centers has declined considerably. With a few exceptions, major cities have lost population while remaining about the same size in terms of area. During the same period, the density in dwellings measured as either people per room (the standard census figure) or amount of space per person, has also declined due largely to the redevelopment building programs of the fifties and sixties. In other words, on any basis, the density in cities has decreased. Yet, as we know all too well, crime rates in the cities have increased sharply during this same period. Now the fact that density has decreased while crime rate has increased does not prove that high density does not cause crime; nor, of course, does it prove that high density reduces crime. Nevertheless, it makes it seem highly unlikely that the increase in crime is due to high density; and it provides some evidence that density and crime rate are independent of each other. Perhaps more to the point, it seems to me a powerful reason to discard the notion that our crime problem is due to crowding in the cities.

Density and Stress

It is also important to know that density is largely unrelated to other measures of stress or pathology. I mentioned this in passing earlier, but let me add a few more details. Although the results of survey studies of the type described above are not entirely consistent, they do not generally indicate any relationship between high density and any of the pathologies studied. An extensive study conducted by Booth and his associates, measured the actual amount of space in homes and the density in the surrounding area. They focused mainly on health indicators and found no consistent relationships between density

and anything. That is, they found a few positive correlations, a few negative ones, and many instances of no correlation. But in all cases the correlations were tiny and the fact that they occurred in both directions indicates no overall effect of density.

Mitchell (1971) conducted a massive study in Hong Kong and found no effect of density on people's mental health. Levy and Herzog (1974) investigated the relationship between household density and neighborhood density and various pathologies in the Netherlands. Their pattern of results is typical - higher household density was associated with fewer hospital admissions, fewer mental hospital admissions, higher suicide, and higher accidental deaths; whereas higher area density was associated with higher hospital admissions and higher death rate but not much else. In other words, there is so little consistency among the relationships that the only reasonable conclusion is that density is not a causative factor; or if it is, the relationships are so complex and depend on so many other factors, that for the moment it can be ignored. In my study with Heshka and Levy (Freedman et al., 1975) we found no relationship between density (either household or area) with disease rate of any kind, infant or adult mortality or mental hospital admissions, but did find a very small positive relationship with outpatient psychiatric treatment. Srole (1972) reported that the rates of mental illness, both severe and minor, were actually slightly lower in urban centers than in rural areas and smaller towns. And Cassel (1972) notes that death rates from all causes are higher in rural areas than in urban centers.

None of this demonstrates that living in a city or under any other conditions of high density are necessarily better for you than living in rural areas or under low density. But by and large the evidence is that high density living is no worse. People in cities are as healthy physically, and suffer from no higher rates of mental illness than people living in smaller, less densely populated communities. If crowding is stressful, it should show up in higher rates of stress-related illnesses, such as ulcers and hypertension, and should presumably result in higher infant mortality and shorter life span. It should also lead to a greater incidence of mental disturbance. We see none of this, and we must conclude that under most circumstances high density is not stressful.

Now let me be clear that I am not denying that crowding can sometimes be unpleasant and stressful. A crowded subway car is worse than an uncrowded one; shopping in a store that is packed aisle to aisle is probably worse than shopping in an uncrowded store. Also, living or working under conditions of intensely high density may well be harmful in many ways. However, within the range of densities that ordinarily occur in the United States both in homes and within cities, crowding is not generally bad for us.

One final note on the survey research - it might be thought that even though density is unrelated to the specific pathologies measured, it does affect the overall quality of life. American society has long had an anti-urban bias, and many people feel that the ideal life can be led only in rural areas. We picture the idyllic life in the country, with few people around, away from the supposed tensions and problems of the city. Perhaps living under high density does not make us aggressive or sick, but it does make us less happy. Extensive surveys of the American population disprove this notion. When asked how happy or satisfied they are with life in general, people in cities do not differ from those in any other kind of community (Freedman, 1978). Apparently, each type of community has advantages and disadvantages and they even out. Of course, any particular person may be happier in one type of place than in another - some may thrive in cities while others will wilt; some will prefer the excitement of high density, city living, while others prefer the relative peace and quiet of the country. But overall, there is no indication that one kind of life is better for us than another.

Housing and Crime

One specific question related to density and crime is how living in high rise and high density buildings affect people. Unfortunately the most widely known study on this question is Oscar Newman's (1972) in which he claims to have demonstrated that there is more crime in high rise than low rise buildings, and that larger buildings also produce more crime than smaller ones. There are so many deficiencies in this research that they cannot be fruitfully discussed here. Other than statistical errors, the major problem is that Newman did not take into account the fact that his high rise and larger buildings tended to be low-income housing, and also perhaps even more important, to be in high crime areas. Since we know that income level is associated with crime rate, an easy explanation of the effect is that it is due merely to the incomes of the residents. Similarly, it is clear that the average crime rate in the area must be controlled if any sensible conclusions are to be drawn about the effect of building type. Finally, it should be noted that despite his claims, Newman's own results do not indicate any negative effect of high rise housing, but only of high rise when combined with size - which means merely that the large, low-income buildings have more crime than the other smaller buildings that are not designed for low income families. In other words, the research does not in any sense show what is claimed for it - there is no reason to believe that either high-rise housing or large housing developments tend to produce more crime than any other kind of housing, once income and area are equated.

Unfortunately, there is little careful research on this important issue. We do know that high rise, high density housing for middle-income people in New York City has very low crime rates; and that

many buildings of this type for low income families also have little crime. What we do not know at the moment, is whether one type of housing tends to have less crime than any other; nor what effect housing type has on the tendency of residents to commit crimes elsewhere. This is a crucial question that will be discussed in the section on suggested research.

Laboratory Research on Crowding

The results of controlled laboratory experiments lend additional support to our conclusions regarding the relationship between crowding, stress and crime. When people are put in rooms and the amount of space is varied, there are no overall effects of density, either negative or positive. People are not generally made less efficient, less creative, more aggressive, less friendly, or for that matter less happy by high density. With a very few exceptions, the extensive work on crowding by psychologists has produced no main effects of density. That is, with all other factors held constant, there have been no difference between high and low density conditions.

Having said that, let me add that many investigators have found effects of density, but that these effects are quite complex and depend on other factors in the situation. For example, in our work we have often found that males react negatively while females react positively when groups contain only one sex; and that in mixed sex groups, all effects disappear. This pattern has been replicated by others. However, at least one study (Loo, 1973) found that boys reacted positively to high density, while girls showed no effect. In other words, there are sometimes differences between the sexes, but they are not entirely consistent. Other research has shown that the extent to which people feel in control of the situation, the extent to which they are made aware of the variations in density, and other such psychological factors play a role in determining the effect of density.

Intensification Theory

My feeling about these findings is that the specific effects and the factors involved are less important than the general point that density has no consistent effects on behavior or mood aside from those produced by other features of the environment. On the basis of these results, I have proposed (Freedman, 1975) that one way in which density operates is to intensify people's reactions. Under high density, the other people who are present become more important, more salient features of the environment. Their actions are more likely to be noticed and more likely to impinge on and effect the individual. Thus, each person is more aware of characteristics of the other people and more sensitive to them under high than low density. This causes the reactions to the people to be stronger.

An analogy is our response to music coming over a speaker. When the music is soft, our response to it is relatively weak. We may like it or dislike it, but it has only a small effect on our general mood. When the music is loud, our response is stronger. If we like it, our whole mood may be considerably more positive; if we dislike it, our mood may be quite negative. In other words, whatever our response is under low volume, it is stronger under high volume. Let me try one more analogy. If we enter a room and there is a small painting on one wall, whether we like or dislike the painting will have a small effect on our response to the whole room. If instead the painting takes up the whole wall, whether we like or dislike it will play a major part in our response to the room. The painting does not produce stress under either circumstance; it does not necessarily even produce arousal; but our reactions to it become more important as the painting grows. It is a larger part of our life space and therefore has more effect on us.

Similarly, other people are usually important elements in our world. When the density is low, the other people matter less than when the density is high. Whatever our response to them under low density, it will be stronger under high density. If we like them, we will like them more under high density; if we are afraid of them, we will be more afraid under high density; and so on. Imagine riding in a bus with six other people scattered around the available seats. Under these circumstances it does not matter too much what the people are like, as long as they do not deliberately interact with us. But now imagine riding with the same people in a small car - the characteristics of the other people are much more important and will affect us more because we are virtually forced to interact with them. If they are nice, friendly people, we may prefer the car to the bus; if they are unpleasant people, we will prefer the bus. Raising density does not have either positive or negative effects per se - but it does magnify responses, and therefore the effect of density will depend on other factors, on whether our responses under low density are positive or negative.

Although there has been some direct support for this theory, it is still speculative. I believe that it is at least a partial explanation of how density affects us, and I think it is consistent with most of the available evidence. I also believe that other processes will be needed to account fully for all of the effects of density, but these other processes have not yet been specified or tested. Therefore, for the moment, we have one mechanism to explain how density works, and we have discarded several that are clearly wrong, such as the idea that high density is stressful.

To sum up: the research indicates that high density is not generally stressful. It is not associated with any pathology in natural settings;

and in particular is not associated with higher rates of crime or juvenile delinquency. Rather than being harmful to people, high density is neutral - it intensifies reactions, and these can be either positive or negative. For our present purposes, it is clear that living under high density in a home, or living in a high density neighborhood or city, is not a cause of stress, does not arouse aggressive feelings, and is not a cause of crime.

Implications and Proposals for Research

The most important implication of this reaearch is that we cannot blame crime on crowding. If we could, it would be an easy though discouraging conclusion. It would lead to specific recommendations involving reducing the population of cities and providing more living space in housing. On the other hand, those who believe that high density is the cause of crime and of other urban problems often have a defeatist attitude because, in fact, it is so difficult to reduce densities. These people tend to throw up their hands and say that the problems are essentially insoluble in our current society; and that only profound changes in our social structure will have any effect. Therefore, in some sense it is heartening that high density is not the culprit because this means that we may have a chance of dealing with our problems. Cities are not doomed, they need not have high crime rate merely because of high density; and as the population of the suburbs grows, it need not necessarily lead to more crime.

Yet we should not disregard density entirely. Although it has no overall negative effects on people, it does have effects and they can be profoundly important. All of the research indicates that people do behave differently, usually more intensely, under high density; and that the nature of the situation and of the people involved determines whether high density will have positive, negative or neutral effects. The intensification idea leads to clear predictions regarding the effects of density under varying conditions. For example, if the relationships among people in a community are generally friendly and helpful, they should be more so under high density; whereas if they are unfriendly, suspicious and antagonistic, they should also be more so under high density. In the former kind of neighborhood, we would expect even more positive relations under high density, and presumably less aggressive behavior and less crime; in the latter, we would expect more aggressiveness and more crime under high density. Moreover, if people from outside the area are the major source of criminal activity, we would expect that the high density friendly area might discourage crime; whereas, the opposite might be true of a high density unfriendly neighborhood. A similar agrument can be made regarding levels of density within a dwelling (or any other building). If relations among the people are generally good, high density (within reasonable limits) should magnify the positive relationships; whereas if the relations are poor to begin with, high density

should make them worse. And in the former, there should be less aggression aroused under high density (and correspondingly less chance of crime either in the house or elsewhere), while in the latter, there should be more aggression and more crime under high density.

This suggests that research could focus on detailed analysis of neighborhoods and families living under high and low density conditions. It would be important to demonstrate that tight-knit, friendly neighborhoods with high density have less crime than similar low density neighborhoods and that the reverse was true within neighborhoods that lack a sense of community and friendly feelings among residents. It suggests that high density areas are potentially the best for reducing and detering crime (as Jane Jacobs among others has suggested), but that in order to have this effect, the neighborhood must be of a special type. The anonymity that exists in many urban areas would produce this effect - only those areas that become "neighborhoods," in which people get to know each other or at least have a sense of community, will lead to lower crime rates under high density. On the other hand, high density areas are more likely to develop such a sense in the first place and therefore should have the greatest potential for deterring crime.

It is perhaps even more important to discover whether tight-knit families that live under high density actually produce less crime and juvenile delinquency than similar families living with more space. This is very difficult research to conduct, but is potentially of great importance.

The study I would recommend most strongly concerns the relationship between housing type and crime rate within the building and crimes committed by residents. Note that these are two separate questions. It is possible, for example, that one type of housing structure will lead to more crime in the building but for some reason not tend to "produce" criminal behavior - among residents; and so on. The research is quite complex because it requires selecting representative buildings of various types, in many different areas and communities. The next step would be to assess crime-rate. It would also be desirable to obtain additional information on the buildings including the average income and other demographic characteristics of residents, whether or not a tenant association exists, how long residents have lived there, and information about the design of the buildings. Similarly detailed information should be obtained regarding characteristics of the area in which the building is located, and about the community in general. Then all of this information would be related to crime rates within the building and juvenile delinquency and adult crimes committed by residents of the building.

I hesitate to make specific predictions, but certainly there is nothing in the literature to suggest that any one type of building will be generally worse than any other type once extraneous factors are controlled. On the other hand, it is quite likely that specific buildings will be better for certain people and under certain circumstances, and that would be the major thrust of the research. In other words, if a building is to be built for a particular population in a particular area, what would be the best type of building in terms of minimizing crime rate? At the moment, we have no idea how to answer this crucial question. The research would be tedious, but fairly straightforward.

Finally, it would be fascinating and important to investigate how different people respond to different levels of density. We have seen that under some circumstances males and females react differently; and there is reason to believe that there are other, consistent individual differences - some people responding well to high density, others to low density. It is also possible that the degree of density interacts with life stage such that people with young children, older people, singles, and so on will respond differentially to differences in density.

This research would entail specifying the variables of interest, locating people who represent the characteristics to be studied or obtaining a random sample of people and obtaining measures of these characteristics, and then investigating their responses to variations in density. The particular responses studied should include aggressiveness and friendliness, actual criminal behavior, and other measures of pathology and health. As with the housing study, I would predict no overall differences due to density, but would expect that different groups would consistently respond better to one level of density than to another.

This might be one step toward allowing us to answer the question: for this particular individual, with these characteristics, in this stage of life, what kind of housing, what level of density, and what kind of community is best in terms of minimizing criminal behavior and maximizing productive, pro-social behavior and general health. As with housing, we are now in no position even to attempt an answer to this complex question.

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SOCIAL STRESS AND RISING RATES OF SOCIOPATHY

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While some sociologists have reminded us of the seriousness of white collar crimes and some psychologists have noted the lowering age of serious youthful offenders, the general public has become increasingly concerned about "crime in the streets" or violent crime. They refer to the recidivists and want them put away. They worry about the senseless and psychotic crimes. Today they seem less fearful of the "con man" than the criminal assault, the rape, the child abuse, the wife battering that go on endlessly. What they fear most is the sociopathic and antisocial personality. In the fall election campaigns, candidates proclaim their toughness on crime and favor a death penalty revival. While the total ambience of our uneasiness includes the high profits of organized crime and the drug traffic, we cannot fail to note connected problems like the rising rates of alcoholism among ever younger early adolescents. In my city, for example, a recent crackdown on drugs caught early adolescents in the net. The prominence of early alcoholism is also felt.

One cannot simply refer these rising and changing rates to internal genetic and biological stressors. Cross-cultural comparisons, for example the general lawfulness of the Japanese when constrasted with the situation in the United States, would suggest caution. Nor can I. although I have been trained in psychoanalysis at the Institute of Psychoanalysis of Los Angeles, find easy explanations in wholly psychological paradigms and models. Indeed, in my chapter called "Cultural Induction of Stress" (Opler, 1967), and in our Midtown Manhattan Mental Health Study, we find that psychodynamic processes are responses to sociodynamic ones. The larger variables of social class plus the conditions surrounding ethnic and cultural groups, all of which are conditions of existence for groups of people, affect intrapsychic functioning of individuals, and such resultant variables as crime or sociopathy. This matter must be researched in every community where high rates of crime are the problem.

We are not saying that the individual does not respond deeply, and even in biologic ways to what we, in the Midtown Manhattan Study called the environmental stresses pressing upon him. For human reactions are more holistic, and the whole organism reacts or behaves, or "minds" in our mental activity. To presume that we merely adapt or merely

adjust in our responses to environmental stressors and do so in the interests of achieving a homeostatic equilibrium is to deny that we grow, we change, we become well or ill, or that human behavior can become patterned in various directions. Selye's (1956) General Adaptation Syndrome is based upon the notion of an open, rather than a closed system. Franz Alexander (1950) added to this the observation that hysterical behavior in humans makes use of the voluntary central nervous system, while psychosomatic ills in more guarded fashion utilize the involuntary CNS. In the Midtown Manhattan Study, a multi-million dollar research in which I was a principal investigator, we found mental health impairments to be operationally defined as impairments in life functioning. When we sought antecedent conditions for both kinds of impairment, we found them globally or generally to be present in 14 areas, as follows:

(1) Parents' poor physical health
(2) Parents' poor mental health
(3) Childhood economic deprivation
(4) Childhood poor physical health
(5) Childhood broken home
(6) Parents' character seen negatively
(7) Parents' quarrels
(8) Disagreements with parents
(9) Adult poor physical health
(10) Worries about work
(11) Worries about socioeconomic status
(12) Poor interpersonal affiliations
(13) Marital worries
(14) Parental worries

The perceptive reader will, of course, note certain continuities between the two columns.

What lies behind this nexus of parental, childhood and adult problems? In the United States, serious problems do result from consequences of culture change. The nuclear family household does not function autonomously within its walls, though it is found there. In our past, a larger and less mobile family over generations functioned more deeply and interdependently in communities and neighborhoods, with more overlapping network ties for members of the same household. The basic human condition in the United States today is urban life with fully three-quarters of our population living in cities. A growing urbanization further includes the suburbs, for they expand outwards, partly becoming a catchment area for middle and upper classes, and partly an industrial growth point occupied by lower class and disadvantaged ethnic groups. Thus the family as such offers little refuge from urban chaos, and, as a rule, ethnic and class segregation increases as the city grows in size and becomes older.

Relationships can fractionate in the diversity of modern urban life, further isolating the household. A network such as Navajo Indians form in Arizona is called the outfit, composed of matrilineally related extended families living fairly close together. The Navajo child belongs to an outfit which farms within a definite territory, clearing and planting fields as old ones become infertile, and also herding within their own domain. No child is at the mercy of two parents alone since clan elders are corporately responsible for clan members' behavior and for training their children. This diffusion of authority and responsibility makes our Midtown Study nuclear family charting less likely and better balanced by sensitive feedback and constraints from the larger society which also monitors cultural values. Since cultural behaviors are not innate, but are shared by others of the same community through continuative socialization and enculturation processes, they will tend to be reinforced through repeated face to face relationships and will, of course, add to what theorists like Erich Fromm have called social character.

A criminologist like M. E. Wolfgang (1976) finds child and spouse-abuse, homicide, suicide, assaultive injuries and aggressive verbal behavior cluster in families and thrive under social conditions which deserve the terms violent families in violent communities. In an article Y. Kumasaka, R. J. Smith, and H. Aiba (1975) note socio-economic factors working in both instances, and social change producing new disolocations and conflicts in Tokyo, yet the formal social controls and more traditional interpersonal relationships of the Japanese scene do make for a cultural difference. In fact, various observers have pointed out that not only are indices of social disorder, such as rates of delinquency, felonious crimes, divorce, rape, assault, drug use, and so forth, remarkably low in contrast with ours, but that some of them have remained stable or even declined in the past two decades. On the other hand, a psychiatrist, B. G. Burton-Bradley (1974), sees crime, mental disorders and alocholism subtly linked in developing countries to the psychological stresses of social adjustments under urbanization.

That persistent basic unit of our society, the nuclear family of parents and children, is apparently in trouble, but its troubles occur in the face of enormous structural changes in society as a whole. The whole quality of life may deteriorate in what is called the "inner city" not because people deteriorate in some mysterious fashion, but because new growth points in housing, in industry, and in upward class mobility appear peripherally in most cities. Urban blight occurs in unplanned and abandoned areas, in slums or transitional zones as urban sociologists once called them. In some cities of our urban Northeast, fully one-third of properties are owned by city governments in lieu of tax delinquencies, and arson is a growing problem. Sophisticated values of city life, once described as

individualism, anonymity and privacy are lately seen to be blemished by violence, muggings, rape, theft and drug abuse. Today the family is more important than ever before, simply as a last resort because "community" and neighborhood have lost ground to urban complexity. The new complex society is, in its texture, pluralistic, with increasing class segregation, ethnic heterogeneity, cultural diversities. In our Midtown Manhattan Mental Health Study, these larger independent variables formed a framework for investigating the epidemiology or extent of mental disorder. Our second goal, based on this, was to understand the etiology and psychodynamics of these disorders, seen in their ethnic and cultural group or family settings. The relatively symptom-free were only about 18 percent of our New York population, and roughly 45-50 percent or half the adults studied could have benefited from psychiatric care or treatment (L. Srole, M. K. Opler, T. A. C. Rennie, et al., 1975 and 1977).

Concern that the nuclear family is not functioning as it once did, or as it should, is, of course, not new at all. But the tie of conflicted families with difficult economic conditions and unstable community environments tell us that cracks in family solidarity can now deteriorate with more unchecked human consequences. More important, perhaps, than the shocking epidemiological figures of the Midtown Manhattan study, was the finding that one must start with the social or cultural nature of the disorders themselves. The specific types of illness and their amounts will vary with conditions in society (M. K. Opler, 1968). For example, the types of schizophrenias may vary with the culture, or even in subcultures like Italian and Irish-American (M. K. Opler, 1957). Similarly, forms of depression occur in specific cultural contexts (M. K. Opler, 1974). The changing forms of family life in urbanized America, as elsewhere, are involved in the etiology, and hence the extent of mental disorders. Armed with these discoveries, we can change our policy and also our research strategy regarding mental health.

Commenting on the development of skid rows in the United States, one of my students did field research in the flop houses and curbsides directly and reinforced these materials with questionnaires. Social isolates involved in alcoholism and petty crime, transients and migrants with poor histories of socialization, marginal life styles under abhorrent social conditions and poor housing marked the total picture (Levinson, 1974). In an article called "Running Amok" which constrasts with this extreme passive side of the sociopathic spectrum, K. Schmidt, L. Hill and George Guthrie describe the largest number of cases ever assembled of a homicidal killing spree disorder long considered in the literature and frequently located in Malayan societies, in the Philippines and in Hawaii. The culture within which amok appears is one of great sensitivity to dignity and personal status, and one in which anger and resentment are supposed to be concealed. A high frequency of violence follows alcohol consumption in the rural areas.

Further, the relatively undirected upbringing of male children in Malay and Malay-related cultures, e.g., in Sarawak where amok occurs contrasts with the Chinese where there is strongly directive upbringing. Further, the parang or kris is worn in jungle areas, and vengeance killings, even for apparently accidental injuries, are not unknown. In the mental disorder form, malaria and hypoglycemia due to economic pressure and poor diet hage been imputed. Finally, running amok and latah, a condition characterized by echolalia, echopraxia and command obedience have been linked by the shared feature of a narrowing of attention. If one thinks further of sex roles in terms of aggression and passivity, amok is a pathology found in men, and latah in women (K. Schmidt, L. Hill and G. Guthrie, 1977). In my own writings on amok, Latah, and the imu illness of the women of Hokkaido in northern Japan, I have added to these points, the further observation that the women involved in the last two illness or culture-bound syndromes are in difficult social positions and subject to economic pressures.

We have listed this range in styles of sociopathic behavior, from the passive forms connected with alcoholism and the drug abuse victims to the culture-bound syndromes of social isolates in order to throw into relief a concept close to Emile Durkheim's well-known self to other unrelatedness, or anomie. We all know from clinical psychiatry, for example, that persons suffering from depressive state disorders have deep feelings of worthlessness, guilt and unrelatedness. Erik Erikson has long suggested that lacks in basic trust can be inculcated early in infancy and childhood, if the affectionate lacks are pervasive. We also know that child-abusers were themselves abused as children, even in family settings. We are, therefore, suggesting that the more aggressive forms of sociopathy mentioned at the outset in this paper refer to psychodynamic processes in the individual, and indeed, in whole groups of individuals whose covert resentment, and towering neglect and exposure to violence can only have such a result in the psychic economy. It is no accident that practically all authors pondering these matters touch upon these same factors (R. C. Cloninger, T. Reich and S. B. Guze, 1975). Somehow, in such discussions, what has happened to the family in the larger processes of urbanization are always imputed. Certaintly, the family farm is not a central or major American production unit today, although it was no doubt the single most important one about a century and decade ago, in Civil War times, when the United States was still partly an agrarian society.

The American family has changed in size and type, in locale, in mobility and in functions drastically since the Industrial Revolution. From a large group, often composed of parents, numerous children and sometimes several generations under one roof, it has become the more temporary nuclear family, or even liaison point of adults and children. Indeed, unlike the Navajo outfit, not just relatives but grown children also become widely dispersed through corporate job mobility. Besides

changes in size and mobility, family stability is frequently assailed by brittle or fragile marriages subject to desertion and divorce. Husbands and wives all too frequently are obsessed by what they can get from marriage, not what they together can build in it. Similarly, the child's success is measured by whether it justifies "sacrifices" parents make in the upbringing. The constant cry ringing out with the cash register is: Does the isolate-individual from the isolated unit of the nuclear family win self-fulfillment, self-realization and self-identification? That is the image that haunts us in a system where supportive family functions since the Industrial Revolution have shifted from homecrafts and primary production of food, shelter and protection to increasing dependence on factory made goods and bureaucratic and impersonal services and professions. Fundamental changes in economy, in class structure, and in the size, mobility and urbanized locale of families mark the basic changes in the conditions of existence affecting individuals. The small town, community and neighborhood, with relatively immediate decisionmaking processes no longer characterize the United States as in de Toqueville's picture of democracy. With the Industrial Revolution, population recruitment from our own villages and towns and from foreign shores as well fed into the rapidly expanding industrial and urban centers of the economy. The contrast between the earlier community values and the impersonal city was difficult to master, and, for some overwhelming.

Among more philosophical social scientists, Ferdinand Tonnies was perhaps the one who clearly denoted the change in setting or social context which now failed to support the individual in society. His terms, Gemeinschaft and Gesellschaft, label the corporate, tightly knit and highly interdependent style of social life characterized by smaller settlements, daily contacts, minimal specialization, total families and community responsibility versus the Gesellschaft principle of larger and impersonal society, loosely competitive and focused on the task at hand, relatively undirected by human and corporate values, often specialized, and hardly requiring whole families to interact with each other. Persons go their own ways. Human ties are marked by impermanence, intense and reinforced relationships are missing, contracts are instrumental and self-serving, and certainly, if emotional supplies are lacking in the weaker family structure, they are harder than ever to find in outside contacts.

A psychiatrist like Herbert Hendin (1975), has picked up on these themes, suggesting that hostility and self-interest have replaced tenderness and mutuality. Obviously, the family in the United States is having increasing difficulty in caring for children adequately, since the suicide rate for young people 15-24 has increased 250 percent in the last twenty years. Further, the Aspirin Age of the fifties has been followed by the Drug Decade of the sixties, and we now add drug abuse to alcoholism and both minor and violent crimes. All of these are

increasing, as Hendin notes, not merely among the families of the poor and in broken homes, but in affluent and intact families. He also states that exploitativeness and empty sensation-seeking replace commitment and involvement in the culture. Earlier, Riesman had stated the theme as personal alienation as "the image of the other directed" mass of humanity who take their cues from persons important in the bureaucratic and hierarchical society (D. Riesman, N. Glazer and R. Denney, 1950). Even earlier than this, Erich Fromm (1941) described the modern, urban culture which produced the human feelings of isolation and powerlessness. The manipulative "consumer-oriented salesmanship" which required and produced the exploitation of others was discussed in his sequel (1955).

Obviously, we are now discussing large-scale cultural value orientations that emerge from a total way of life, or conditions of existence in types of society that can be deeply pervasive and therefore effect sectors of a population. The difficult hurdles facing the black family in America are instructive. An American historian, very recently, has corrected several stereotypes (H. G. Gutman, 1976). Gutman points out that the black family, even in slavery, was often multi-generational and as intact with parents and children as circumstances allowed. He corrects the prevailing misconceptions of E. Franklin Frazier and others that a matrifocal family unit persisted from the time of slavery to the present. Even more striking, extended family feelings and prohibitions against cousin marriages preserved a larger exogamous unit than in some agrarian white land-holding and slave-owning plantation families where cousin marriages were encouraged to keep land holdings intact. Further, in the Harlem of New York in the twenties, 85 percent of families were intact units of children and both parents. It was not until black families, and lower class white ones as well, encountered unemployment in the labor force that male desertion (poor man's divorce) really occurred. Thereupon, both black and white families, with the Great Depression in 1929, began to suffer higher rates of unemployment with broken homes occurring in both groups.

Just as continued unemployment alienates some persons from a work ethic, and others become alienated when they lose touch with the direct product of their toil or craft, so the complexities of modern industrialization affected family forms as members of a family became geographically, socially and economically dispersed. Mutual functions, like protectiveness, com .ementarity, and caring as a part of love seem to become futile empty gest res and a waste of effort, not because people are incapable of caring naturally, but because relationships are separated and atomized in the competitive marketplace. Not only do some parents, male or female, desert the family, but youth also, including lost teenagers. There are "open marriages" that are mock marriages without commitment, communes that are extremely temporary substitutes for family forms, sexual polarizations in male homosexuality

and lesbianism, and increasing child neglect, child abuse and child abandonment. Such trends obviously are reflected in rising rates of personality disorders and antisocial pathologies. Although we have already pointed out that human capacities for affection and cooperation can and do exist outside the family forms, and were once supplementary and supportinve of the nuclear family core in extended families, intergenerational ties, clans and similar social structures, we have failed to denote this need and to insist on substitute forms in social planning.

For some, a faddism for personalized social formulas, like communes, the drug cult, the counter-culture or open marriage was like an adolescent rebellion against inadequate or weakened family forms. Even sociologists, like William F. Ogburn, long ago hinted that technological innovation must be accompanied by "cultural lag," implying a residue of social problems, including family problems, in the wake of industrial and urban development. He even suggested that emotional ties within the family were now strategically maximized in importance, as if the family itself, by some unexplained and somewhat magical force, were not itself at bay. Today, after the Midtown Manhattan Mental Health Study, we know that structural and functional alterations in the family have a greater immediacy and threat. Ethnic and cultural family group studies must be a major goal of investigation. The social dynamics affecting the resulting psychodynamics through typical psychological stress systems is the real key to the rising rates of sociopathy. Both research design and attention to the actual lives of people seen in their social and cultural settings will reveal their psychological ills to be a dependent variable of larger and weightly social, cultural and economic conditions of existence.

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RACE, STRESS AND FAMILY VIOLENCE

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The subject of violence in family relations has been neglected as an area of study by behavioral scientists until recent years. Most of the research has been carried out by criminologists and not family sociologists. A primary reason for this void in the family literature on family violence has been the prevailing ideology of the family as a unit characterized by affection and cooperation between its members. Yet, it has been known for some time that the largest group of homicides in the United States involve spouses, kinsmen and close friends. In the Wolfgang study of homicide in Philadelphia during the period 1948-1952, over fifty percent of all homicides involved an altercation between family members and close friends.(1) And one fourth of all homicides were within family killings.

It is difficult to discuss violence of any kind in America without noting the over-representation of blacks in the official statistics on violent crimes. In 1972 they were recorded as committing 60 percent of the homicides, 45 percent of the aggravated assaults, and 50 percent of the rapes in the United States.(2) Although there is an increase in interracial acts of violence, the aggressor and victim in most acts of black violence are black. Most of these cases of black violence involve family and friends. It should be noted, however, that the proportion of homicides involving strangers is sharply on the increase.

Despite the fact that blacks are over-represented in the statistics on violent crimes, the subject of family violence in that group has been totally ignored by criminologists and other behavioral scientists. Blacks are also very prominent in those groups most likely to commit acts of family violence: the lower-class, large families, and the unhappily married. Hence, it is not surprising to find that romantic triangles or marital arguments add to the large number of violent crimes in the black community. One-fourth of all black homicides in 1972 took place among family members. A majority of them consisted of spouse killing spouse and the others involved other family killings between parent and child.(3)

Between 1965 and 1971 black deaths as a result of homicide increased from 50.7 per 100,000 population to 81.6 for males, and 11.7 to 16.0 for females. It is the sixth leading cause of death

among black males and number 11 among females. Among young black males, 15-25, it is the second leading cause of death.(4)

Stress Factors and Black Family Violence

It is the purpose of this paper to examine the rates and causes of black family violence as a result of stress factors.(5) While it may be simple to dismiss black violence as a result of that group's predisposition to violence, the cross-cultural evidence does not support such an assumption. Bohannon's data for African societies illustrate that it is cultural, not biological factors, that account for the high homicide rate among Afro-Americans. This is evident from his studies which show that African rates tend not only to be lower than Afro-American rates but also lower than rates for the general population.(6)

In this paper I do not uncritically accept the theory of Frantz Fanon about the therapeutic effects of violence among oppressed peoples. He does provide a guideline for understanding black violence in his supposition that the colonized man will initially be violent against his own people and that the development of violence among the oppressed colonial subjects will be proportionate to the violence exercised by the colonial regime.(7) Thus, it is understandable that the victims of black violence are primarily other blacks and that the white majority and its government leaders have set an example of violence by its historical acts of aggression against Third World peoples in the United States and throughout the world.

Before looking at certain forms of family violence, it is necessary to investigate how blacks are socialized into violence.

Socialization into Violence

Blacks are socialized into violence in a number of ways, via internal and external culture processes. The role modeling of television and movie heroes has considerable impact on the impressionable minds of young black children. The emphasis upon violence in the mass media is undoubtedly related to acts of violence among black youth. It is estimated that by age 12 the average child has witnessed 10,000 acts of violence on television alone. Since black children watch television more often than white children, the impact of such violence is even greater.(8) Although the number of black exploitation movies has declined in recent years, they fed black youth a steady diet of violence that far exceeded that found in movies catering to the white majority youth.

Among lower-income black children, violence is exposed to them at very early ages. In housing projects, for instance, it is not at

all uncommon for young children to have been shot at, robbed and raped by the time they reach the age of ten. The structure of low-income public housing projects is conducive to certain forms of crime such as rapes on the stairwell, robberies in elevators and sniper shooting from windows. Hence, children living in these areas that are relatively unprotected by the police, must learn to protect themselves.[9] Other forms of negotiating conflicts are subordinated to the display of physical skills which will prevent one from being overwhelmed by those who will test a person's thoughtfulness.

The status-conferral system in black life initiates the youth into acts of aggression. In the ghetto, the highest level of esteem and respect is reserved for the best street fighter in the neighborhood. Older males in this environment encourage children to develop aggressive tendencies by their philosophy that a "real" man is supposed to fight. In altercations between black youth, they can often be observed encouraging them to fight. Claude Brown comments that in Harlem the people everyone respected were the men who had killed somebody. And, the children respected by the adults in their neighborhood were those who did not let anybody beat them.[10]

The black ghetto, however, is nothing but a microcosm of the entire society. Violence is endemic to the American social structure and it easily describes its reputation as the most violent country in the world. Its homicide rate is twice as high as that of any other industrialized nation. While public officials decry violence by oppressed minorities, they eagerly support wars which so far have accounted for four million deceased Americans and a much larger number of enemy deaths.[11] The public support for President Ford's destruction of the Cambodian ships guarding the Mayaguez is but one example of the cultural supports for violence in this country. Americans are the most heavily armed citizenry in the world.

Sexual Aggression

Crimes of sexual attacks against women are pervasive and sharply increasing in this country. The typical rapist is a black male and his victim is most often a black female. However, the most severe penalties for rape are reserved for black males accused of raping white women. Although 50 percent of those convicted for rape in the South were white males, over 90 percent of those executed for this crime in that region were black. Most of their alleged victims were white. No white male has ever been executed for raping a black woman.[12]

To keep our discussion focused on intragroup family violence, we will only examine black sexual aggression. As is probably true of white females, the incidence of rape of black women is under-reported. Ladner reported that an eight-year-old girl has a good chance of being

exposed to rape and violence if she is a member of the black underclass.[13] The examples of black males who have "taken it" from black women are probably known to us all. Widespread incidents of this kind are rooted in the sexist socialization of all men in this society. And, it is pronounced among black men who have other symbols of manhood blocked to them. Various explanations have been put forth to explain why black men rape their women. Poussaint attributes it to the tendency of black men to adopt the attitudes of the majority group toward black women. Because white men have historically raped black women with impunity, many black males believe they can do the same.[14] They are often correct in that assumption, as depicted in the saying of Sapphire that she realizes that "it is useless to report being raped because no one will believe that she didn't just give it away."[15]

Sexual violence is also rooted in the dynamics of the black dating game. The majority of black rape victims are familiar with their attacker, who was a friend, relative, or neighbor. Many of the rapes occur after a date and are what Amir describes as misfired attempts to seduction.[16] A typical pattern is for the black male to seek sexual compliance from his date, encounter resistance which he thinks is feigned, and proceed to forcibly extract sexual gratification from her. Large numbers of black men believe sexual relations to be their "right" after a certain amount of dating. A truly reluctant black woman is often victimized by the tendency of many black women to play a coquettish role in resisting male sexual demands, when they actually are willing to engage in sexual intercourse. Such a pattern of rape is defined as situational and led feminist Germaine Greer to label seduction as a four letter word.[17]

Rape, however, is not regarded as the act of a sexually starved male but rather as an aggressive act toward females. Students of the subject suggest that it is a long-delayed reaction against authority and powerlessness. In the case of black men, it is asserted that they grow up feeling emasculated and powerless before reaching manhood. They often encounter women as authority figures and teachers or as the head of their household. These men consequently act out their feeling of powerlessness against black women in the form of sexual aggression.[18] While such a characterization of black rapists may be fairly accurate, rape should be viewed as both a sexual and political act because it is a function of external stress factors, such as racial prejudice which maintain the barriers to normal channels of manhood for black males.

Manhood in American society is closely tied to the acquisition of wealth. Wealth is power--power to control others. Men of wealth are rarely required to rape women because they gain sexual access through other means. The secretary or other female employee who submits to the sexual demands of a male employer, in order to advance

in their jobs, is as much an unwilling partner in this situation as is the rape victim. The rewards for her sexual compliance are normatively sanctioned, whereas the rapist does not often have the resources to induce such sexual compliance. Moreover, it is the concept of women as sexual property that is at the root of rape as a crime that is ipso facto a male transgression. This concept is peculiar to capitalistic, European societies rather than African nations where the incidence of rape is much lower. For black men, rape is often an act of aggression against women because the kinds of status men can acquire through success in a job is not available to them.

Marital Conflict

Homicides and assaults committed by spouses are rather pervasive in lower class black communities. At one time the murder of a spouse comprised one-fourth of all the homicides committed in this country. It is primarily a crime of the lower class as reported in official crime statistics. While domestic quarrels occur quite often in the middle and upper classes, they do not report them with the same frequency as the poor. Despite the underreporting of spousal violence by the upper classes, it is probably still more common among lower class blacks for reasons associated with their socioeconomic and racial status. Among a group of lower class black women whose marriages were disrupted by separation or divorce, Rainwater found that beatings by the husband ranked as the fifth leading cause of their marital dissolution.(19)

Contributing to spousal violence in this group is the normative expectation that some physical violence against the wife is natural or necessary. In Chicago, for instance, a good old man is defined as one who "may slap or curse his old woman if he's angry but definitely not beat on her all the time when he's sober or endanger her life when drunk."(20) The husband is expected to use his physical superiority over his wife on occasions and frequent reference is made by lower class black men that they are supposed to treat women roughly to keep them in line. A major class difference, without regard to race, is that physical domination by a spouse is seen as an intolerable behavior pattern by many middle class wives. The first blow struck by a husband is taken by middle class wives as a symbol of gross abuse and it alone can result in a divorce action.

Among the reasons for violent marital conflict are disputes over money, jealousy or drunken behavior. Jealousy is most likely the primary cause of spousal violence. Because of a community norm that encourages extramarital affairs, a liaison with another man or woman may ensue in a violent conflict between spouses.(21) Black families may be particularly subject to this stress in a marriage because of the belief by black husbands that a wife will seek sexual

gratification elsewhere if relations do not go well. Such a belief may not be without foundation as one study revealed that one-half of their black female subjects accepted extramarital relations for the wife under certain conditions.(22) Men who are only living with, but not married to, a woman are even more prone to violence motivated by jealousy. One man commented that, "I figure if you are just staying with a woman and you're not married to her, she's as much somebody else's as she is yours." Sometimes, being married to a woman is regarded as a license for physical domination of her. According to this man, "If that's your wife, can't nobody say nothing. If you want to whip her, you can whip her."(23)

An unusual characteristic of black spousal violence is the incidence of black female aggression. In African societies, men are almost always the aggressor in domestic homicides.(24) But the black woman "has a reputation for using razor blades and lye to take care of business when he pushes her too far."(25) In the Boudouris analysis of family relations, homicides in Detroit during the period 1926-1968, he found black women were the defendant in 44 percent of the court cases.(26) According to official statistics for the year 1972, the husband was the victim in 43 percent of the family killings.(27)

Upon further investigations of these family homicides, it appears that these high rates for black women can be explained as an act of self-preservation when attacked by her spouse. Such an explanation is born out by the findings of Wolfgang that one-third of the homicides he analyzed showed that it was the victim who committed the first aggressive act.(28) However, it can also reflect the low status of black men in their family relations because of their inability to find jobs or being employed at jobs which pay very low wages.

The class characteristic of individuals involved in violent marital conflict is a natural result of their racial status. High rates of unemployment and underemployment automatically consigns the majority of blacks to the underclass and several factors confluence the incidence of marital violence. In the higher social classes, both black and white, men are able to exercise control over their wives in other than violent ways. Middle class men have more prestige, money and power than lower class men. Hence, they possess greater resources with which to achieve their aims with intimates.(29) The balance of power in marriage belongs to the partner bringing the most resources to the marriage. In general, money has been the source of power that sustains male dominance in the family. As has been noted elsewhere, "money belongs to him who earns it, not her who spends it, since he who earns it may withhold it."(30)

Lower class black males often find themselves at a disadvantage vis-a-vis their wives within the family. As a result of their consignment to the underclass, they are often unable to provide for their families properly and have a problem maintaining status in the eyes of their wives and children. Because they are aware of their role failure, they are inclined to counter-attack any perceived challenge to their manhood in the form of violence. Rainwater observed that beatings and arguments precipitated by a husband seem to occur particularly when there is a discrepancy between the demands on him as a provider and his ability to meet those demands.(31) Hence, he responds violently in a attempt to regain status and respect for this role as head of the family.

The incidence of domestic violence is probably higher among lower class blacks than poor whites. A major reason for this intra-class difference is due to the strictures of racism. It is the internal devaluation of their self-worth as individuals that precipitates much of black violence. Comer reports that violent behavior against other blacks is often a displacement of anger toward whites. Since many blacks have little power to effect change, overwhelming obstacles and hopeless surrender produce high levels of frustration.(32) In the words of psychiatrist Alvin Poussaint, "Frustrated men may beat their wives in order to feel manly. These violent acts are an outlet for a desperate struggling against feelings of inferiority."(33) It has only been in recent times that this rage and anger has been turned against whites.

Marital violence among blacks is primarily related to the poverty, oppression and cultural values found in a racially stratified society. Blacks are not predisposed toward violence any more than other groups. But, in a society which dehumanizes them as well as economically exploits them, psychological controls are broken and violent rage against the most accessible and safest person ensues. Environmental factors places such stress on blacks as to make the incidence of marital violence much higher than among the white majority population. Consequently, we must look to the creation of a more equitable racial and economic system for the solution of this problem.

Parent-Child Violence

Parental abuse of children is nothing new. In earlier periods it was believed that children were inherently sinful and this evil must be violently exorcised. Among Americans of African descent, however, children have historically avoided much of the abuse heaped upon their white counterparts. Both the African and Afro-American's mother's love of their children are strongly documented in the historical records.(34) In recent years the increasing trend in parental injury to children has been most pronounced among blacks. In the years 1967-68, the child abuse reported for black children was 21.0 per 100,000

in comparison to a rate of 6.7 per 100,000 white children.[35] Some of the racial differences can be attributed to reporting bias but much of it reflects the effect of environmental stress on black parent-child relationships.

Among the factors responsible for black child abuse are the conditions of poverty under which many children are reared. Child abuse is primarily concentrated in the lower class. These families, especially if they are black, are much larger than middle class families. The percentage of black families with four and more children was twice as likely to have a reported case of child abuse than smaller families.[36] Moreover, those families have less living space in which to rear their children than more affluent families. Many of them will be headed by a woman, who must often work outside the home and take care of her children afterwards. Such a combustible set of factors frequently leads to abusive behavior toward children.

The child-rearing methods of low-income parents is cited as an important cause of child abuse. While middle class parents tend to use verbal reasoning and psychological techniques with their children, the lower class inevitably use physical punishment to exact child obedience. As was true of their parents, most lower class parents believe that the way to make a child learn is to beat him. While alternate forms of punishment may also be used, a beating is eventually employed to maintain their conformity to parental instructions.[37] However, some authorities believe that middle class child rearing techniques can be just as violent (although only verbal) and psychologically damaging to children as those in the lower class.[38]

At any rate, the physical method of child behavior control can and does lead to excessive injuries to some children. But, in exacting child obedience, many lower class parents are without other effective means of accomplishing this objective. They cannot offer the more effective status rewards to their children. They are unable to reward their children for good behavior because they lack the educational and social privileges of the middle class.[39] Very few of these resources are available to black children in the underclass.

While most people conceive of parent-child violence as commonly involving the parent as the aggressor, there are a number of incidents in which the parent is the victim. An increasing number of violent acts, including homicide, are committed by youth under the age of 15.[40] The lack of status and economic resources among lower class black families means that many parents are unable to control a child's aggressive behavior toward them. An enormously high unemployment rate among black teenagers in the inner cities is also a contributing factor.[41] Being a poor, uneducated young black male is an oppressive environment

without any means of escape, having observed violence throughout his childhood, is an explosive force which erupts in aggression against those who are physically accessible.

Implications for Future Research

Based on this limited overview of research on race, stress and family violence, the implications for further research are:

1. To examine the particular stresses associated with status devaluation as a racial group and how that stress factor is expressed in violent behavior. Since all blacks will be exposed to some element of racial stress, what factors control violence in some of them and encourage it in others?

2. How do other support systems affect the incidence of family violence among lower-income blacks. The effects of the extended family should be explored for its role in defusing family violence among its members. Among other areas of interest are residence in urban vs. rural locations, and the consequence of primary relationships over secondary relationships in controlling family violence.

3. The effects of class membership on family violence among blacks. Does access to certain social values and resources tend to mitigate the need to use violence as a form of conflict resolution in the family? This, of course, is contingent on obtaining accurate data on the amount of family violence in the various socio-economic strata.

4. We must look at how gender and parental roles are defined in the black community. Does the more independent role ascribed to black women lend itself to provoking assault by the husbands? How is the relationship between parent and child defined? Does the need to exercise parental authority encourage the use of excessive violence toward children?

5. We have very little information on two emerging forms of family violence: husband abuse and child violence directed against parents. There is a need for basic research studies in these two areas due to the dearth of literature on the subject.

6. A most important area of future research is an analysis of employment trends and family violence. Does family violence increase as the rate of unemployment increases? What relationship exists, if any, between the type and status of occupations and the incidence of family violence? Since the unemployment rate is so terribly high among black youth, they should be selected as a target population for studies in this area.

Summary

In this paper the author has tried to show how acts of black family violence and environmental stress factors are inextricably linked. While other forces operate in the incidence of family conflict that may transcend race, the crucial variable in maintaining the practice of intra-family violence among blacks has been their status as a devalued racial group. There is no reason to believe that the lower-class or blacks are any more prone to violence than the middle class or white population. Yet, they are so over-represented in the official statistics on crimes of family violence as to preclude any other explanation other than racial and economic forces are responsible for the amount of violence in their family constellation.

While the most pronounced trend is the increase in stranger assaults and homicides, this does not necessarily reflect a decrease in the number of intra-family acts of violence. With the attendant fragility of marriages, female-headed households and parent-child tensions, violence continues to be a primary source of conflict resolution in the family. It is a violence that was introduced to Afro-Americans in the period of slavery and has persisted throughout their existence in this country. While a greater emphasis on family solidarity, respect for women, and value of children can do much to reduce the amount of violence within the black family, only by eliminating the cause of, and cultural support for, violence in the larger society can we expect to live in an environment that is safe and free from harm.

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THE BIOCHEMISTRY OF STRESS REACTIONS AND CRIME

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Background of the Problem

Stress appears to arise whenever there is a departure from optimum conditions which the organism is unable, or not easily able, to correct. It is the result of an imbalance between demand and the organism's capacity (Welford, 1974).

The infant or child may be subjected to a host of stressful internal and external conditions. The most common of the internal stresses include genetic weaknesses, biochemical brain and nervous system deficiencies, food allergies, toxic chemicals, metabolic disorders, minimal brain lesions, disease, physical handicaps, and sensory learning disabilities. (Selye, 1956, 1974). External stresses might include residing in families with conflict, living in a hostile neighborhood, experiencing love deprivation, school failure, poor economic conditions, racial prejudice, unstable environment, the facing of uncertain, inconsistent discipline, etc.

The combination of internal and external sources of stress are extensive for many individuals, and in many cases these stresses lead to failure in life's tasks and in the development of normal forms of behavior. Healthy personality development and mental functioning requires responding constructively rather than merely adapting or adjusting to stress (Torrance, 1965). Thus, delinquency and crime can be viewed as one possible result of the unsuccessful attempt of the organism to adapt or adjust to stress.

Most contemporary research efforts to understand and to control crime, however, have centered upon the impact of external factors. Little attention has been given to internal stress factors, a situation which only recently has been noted (Hippchen, 1976, 1977, 1978).

This paper will review some of the important research and theoretical work of recent years relating biochemical stress factors to anti-social forms of behavior. Emphasis will be placed upon behavior related to acting-out in children and to delinquency and crime.

Theoretical Development

Theoreticians in biochemistry today hold that there are a number of parameters which influence the attainable level of brain function

in man: genetic endowment, hormonal and nutritional environment, sensory input, and patterned sensory input. Each determinant is dependent on the adequacy of the earlier level of development.

The genetic potential of the developing brain underlies its ultimate possibilities and sets limits on the effect of the other factors that may influence cerebral development. Genetic disease may be characterized by the absence or deficiency of key synthetic or degradative enzymes. Abnormalities may occur in the microscopic appearance and chemical composition of the brain. Defects may involve faulty metabolism or deviance from normal chromosomal complement (Dunn, 1974 and Dondy, 1974).

In its early development the brain is most vulnerable to the hormonal and nutritional internal environment. An inadequate maternal diet in combination with subsequent malnutrition may result in a greatly reduced brain weight. Inadequacies incurred during an early period cannot be compensated for in later life. Protein and caloric insufficiency, often associated with vitamin deficiency, can handicap growth of the brain (Dunn, 1974). The hormones which influence aggressive acts are the same ones which direct sexual behavior and determine the genetic structure of the population. Sex steroids have been shown to have the most direct effect on the pattern of aggression. They can trigger fighting, dominance displays and territorial defense behavior (Thiessen, 1976).

From the biochemical view, the structure of the brain and the way in which the brain operates reflects the properties of its underlying chemical constitutents. The behavioral plasticity of higher organisms cannot be explained, it is held, in terms of electrical activity alone. Presumably, the brain has a chemical basis and is also probably chemically controlled. It is hypothesized, for example, that there is a chemical basis for learning and memory. The behavioral change involved in learning requires a change in the electrical circuitry of the brain-nervous system, but this electrical change is brought about by biochemically altering the conducting properties of the synaptic membranes. Also, the chemical changes could involve the formation of new synapses or the destroying of old ones. Behavior is thus seen as resulting from an interaction of the electrical and chemical systems in the brain (Dunn and Dondy 1974).

Since the brain-nervous system operates in an holistic manner, behavior thus may be influenced in numerous ways: through the interaction of genetic influences on development and optimum functioning, through the molecular concentrations of the nutritional environment (Pauling, 1968), through a variety of positive and/or negative influencing sensory inputs from the environment, and from the patterned sensory input--largely a habitual response set which is learned in coping with internal and external stress factors by the individual.

CONTINUED

1 OF 2

In relation to criminological theory, the new biochemical theories of the brain and behavior should lead us to the following types of theoretical considerations:

1. Criminal behavior at its base may represent certain genetic predispositions, chromosomal abnormalities, or metabolic errors, and these may create important additional stress factors for humans, increasing their propensity to commit anti-social acts.

2. Criminals, at an early stage of infant and child development, may have suffered the stress caused by brain damage in the birth process, or by abnormal hormonal and/or nutritional intake to the brain at the critical early stages of life. If so, it is probable that these individuals continue to suffer the stress brought on by these abnormalities in body chemistry and development in later life. The additional stresses created by these limiting factors can directly or indirectly lead to abnormal types of behavior, among them the violent forms.

3. Criminals probably will show a long history of negative sensory input, although those stresses, by themselves, may not be sufficient to cause anti-social behavior. We already know that criminals tend to have experienced mistreatment by parents, lack of love, low self esteem, poor school performance, negative handling by teachers, school authorities, and the criminal justice system. We have, however, tended to overemphasize the importance of these factors, especially as total explanations of delinquent or criminal behavior.

4. Criminals will tend to show a patterned sensory input which habitually will lead to social and interpersonal types of failures. These mind sets, based upon the thorough distrust and dislike of the self, others, and all social institutions, will tend to insure the continuance of a wide variety of manipulative and other forms of anti-social behavior.

A Partial Review of the Related Literature

The literature which is pertinent to this broad-based theory, which has developed from recent biochemical and related research, tends to be exploratory and multi-faceted. Major lines of research appear to center around the following symptom patterns: a. Vitamin-Mineral Deficiencies-Dependencies; b. Neurochemical Factors and Cerebral Disorders; c. Environmental Contaminants; d. Hypoglycemia; and e. Cerebral Allergies and Addictions.

Vitamin-Mineral Deficiencies-Dependencies

A person with normal genetic requirements who does not consume food that adequately meets these needs can suffer from a vitamin-mineral deficiency. If a person has genetic needs for certain vitamins or minerals far in excess of normal needs, he may suffer from vitamin or mineral deficiency even on a normal diet. Biochemists have reported that the genetic needs and the pre-post natal malnourishment of the infant are critical factors in the development of nutritional dependencies and deficiencies, and that these early disorders can result in numerous behavioral difficulties in childhood and later life (Brenton, 1976; Winick, 1969; Brown, 1971; Cravioto, 1971; Angeletti, 1973; Kanawati, 1966). Hormones also have been shown to be vital to adequate early brain development (Balazs, 1973).

The role of nutrition in childhood and later behavior appears to be significant and varied. Considerable attention has been focused upon the relation of malnutrition to the learning process. The chemistry of the brain appears to be the major regulator of synaptic connectivity, without which effective learning cannot take place (Matthies, 1973). Biochemists also have identified the role of proper chemistry of the brain in short and long-range memory, and for performance of the many intricate tasks which must be processed by the brain in the act of learning (Entingh, 1974; Glassman, 1969; Hyden, 1967). Related research concerning the right-left asymmetries in the brain and how these can affect learning also is an important area of study (Galaburda, 1978).

Genetic disorders and nutritional deficiencies have been related by a number of researchers to the learning problems of children. Some have emphasized the role of physical abnormalities as added stress factors for children in school (Durfee, 1974; Allen, 1969; Firestone, 1976). Others have focused on the failure of sensory input-output development of the child and suggested that this stress factor interferes with effective functioning in the classroom. Especially considered here are the abnormalities associated with seeing and hearing, sensory functions which are vital to reading and other classroom tasks (Buckley, 1977; Dowis, 1977; Dzik, 1966; Malkin, 1976; Powers, 1973; Slavin, 1976, 1978). Still others have pointed to nutritional deficiencies as they may relate to such abnormal behaviors as hallucinations, fantasies, and acting-out of children, and how these behaviors can interfere with the learning process (Berman, 1972; Cott, 1972; Crook, 1975; Fitzhugh, 1973; Hurvitz, 1958).

Another group of researchers have identified nutritional deficiencies as a possible contributing factor to delinquency, crime and to alcohol-drug abuse. A number of studies have shown a high correlation of vitamins B-3, B-6 and C deficiencies to delinquent-criminal

and other forms of anti-social behavior (Brereton, 1975; D'Asaro, 1975; Green, 1970, 1978; Hellon, 1975; Hoffer, 1975; Kahan, 1975; Rees, 1973; Rimland, 1968; Ware, 1978). Abnormal behavior also has been shown to result from dietary deficiencies of such trace minerals as copper, calcium, magnesium, manganese, and zinc. Clinically low levels of magnesium in the blood plasma have been shown to be associated with states of hyperexcitability (Cott, 1978).

The common thread in all of these studies on the effects of nutrition on behavior relates to the biochemistry of the brain. The suggestion is that optimum levels of molecular concentrations of the nutrients are needed for brain growth and effective functioning, and that abnormal, even marginal, excesses or deficits, can result in behavior highly associated with academic failure, truancy, vandalism, delinquency, and even crime.

Neurochemical Factors and Cerebral Disorders

Considerable recent interest has been shown in the neurochemistry of neuroregulators and behavioral states. Some 41 CNS neuroregulators have been identified to this time (Barchas, 1978). A number of researchers have investigated the hypothesis relating the brain neurotransmitter serotonin (5-hydroxytryptamine, 5-HT) in its relation to the inhibition of aggressive behavior (Valzelli, 1974). Since the synthesis and metabolism of 5-HT depends upon the availability of tryptophan, a number of researchers have studied the relationship of reduced brain tryptophan and aggressive behavior. Considerable study related to this mechanism exists (Fernstrom, 1975; Harvey, 1976; Raghuram, 1975; Boullen, 1970; Mawson, 1977; Scherer, 1972).

Some forms of human violence may be the result of cerebral dysfunction, structural brain damage caused by oxygen deprivation, drug or alcohol intoxication or physical injury, focal brain disease, or genetic error. (Yaryura-Tobias, 1978).

Studies of brain disorders in criminals and aggressive children have been conducted by several investigators, all showing some positive correlation (Monroe, 1970, 1978; Morris, 1956). Biochemical and genetic aspects of minimal brain dysfunction and human abnormal behavior also has been studied (Omenn, 1973; Rosenthal, 1975; Shaywitz, 1978; Stephens, 1969; Sweet, 1968; Tarnopol, 1970; Turkel, 1975; Wender, 1973).

Environmental Contaminants

Environmental pollutants typically are heavy metals such as lead, mercury, or cadmium. The lead pollution of our environment, and particularly our cities, has reached a disturbingly high level, according

to several authorities (Caprio, 1974; Bryce-Smith, 1974). Lead toxicity has been related to hyperactivity (David, 1976). Hyperactivity also has been related to excesses of copper (Bonnet, 1978; Pfeiffer, 1972; Rees, 1975).

Environmental hazards of radiation to human behavior also has been studied. Under their normal classroom lighting some first graders demonstrated nervous fatigue, irritability, lapses of attention and hyperactive behavior. The source of the problem was traced to the radiation from the unshielded flourescent tubes in use for lighting. Studies of the harmful effects of radiation from TV sets indicated similar types of abnormal behavioral responses for children (Ott, 1968, 1973, 1978).

Hypoglycemia

Hypoglycemia has been a principle focus of study by a number of investigators for its possible relation to anti-social forms of behavior. Hypoglycemia, or low blood sugar, is a chemical change in the body due to a drop in readily available glucose. It usually refers to chronic low blood sugar due to defective regulation of blood glucose levels. If imbalance in blood glucose regulation produces too much insulin and/or too few insulin antagonists, chronic hypoglycemia results. The condition appears to be related to the high consumption of products containing large quantities of refined sugars and starches, the kind of diet typical of large numbers of children and youth today (Hoffer, 1960, 1975, 1978; Rosenberg, 1978).

Symptoms of hypoglycemia vary according to the intensity of the condition, the individual and contributing factors. Fatigue, irritability, anxiety, depression, crying spells, dizziness, faintness, insomnias, confusion, poor concentration, headaches, and disperceptions are common hypoglycemic symptoms. Some hypoglycemics also suffer from destructive outburst, which links the disorder as a possible factor in anti-social forms of behavior (Bonnet, 1978).

A number of researchers have investigated the possible relationship of hypoglycemia and aggressive behavior. Considerable evidence appears to exist to support the hypothesis that relative hypoglycemia can often be a contributing factor in anti-social behavior (von-Hilsheimer, 1977; Ross, 1974; Podolsky, 1955, 1964; Ervin, 1969; Bolton, 1973).

A syndrome characterized by aggressive and/or assaultive behavior, glucose disturbance, and brain dysrhythmia, has been hypothesized to be caused by a disturbance of tryptophan metabolism (Yaryura-Tobias, 1973, 1975).

Studies of delinquent and jail and prison populations to investigate the incidence of hypoglycemia indicate that levels of this disorder are high and prevalent for these groups (Hoffer, 1966, 1975; Brereton, 1975; D'Asaro, 1973; Bachara, 1978; von-Hilsheimer, 1977; Wilder, 1940, 1947; Reed, 1978).

Cerebral Allergies and Addictions

The ecological approach to the study of abnormal forms of behavior is concerned with maladaptive reactions to foods and chemicals. Termed "neuroallergy," the symptoms may be a component of respiratory tract allergy, a sequel to gastrointestinal allergy, or it may be the direct result of immune system disturbances in the nervous system (Klotz, 1978).

The individual suffering from neuroallergy may be mentally sluggish, unable to read or figure, or he may be markedly irritable, hostile, fatigued, or depressive. Thus, hyperemotionality, hyperaggressiveness, hyperactivity, and violent behavior may all be allergically based (Wunderlich, 1978).

The substances commonly involved in food allergy are the various chemicals that are added to foods. Artificial colors, flavors and other food additives also may be the source of maladaptive behavior (Hawley, 1974; Conners, 1974; Feingold, 1973, 1975; Levitan, 1977; Lockey, 1976; Philpott, 1977).

The foods commonly involved in neuroallergy are cow's milk, wheat, corn, chocolate, citrus and eggs, but more than 300 foods have been identified as allergens with susceptible people. The greater the amount of the food eaten the greater the possibility it will be the cause of allergy in a susceptible individual (one with a family history of allergy) (Wunderlich, 1978; Campbell, 1970; Coca, 1959; Crook, 1963; Davison, 1952; Dickey, 1976; Mandell, 1969, 1971; Philpott, 1965, 1978; Randolph, 1959, 1962).

Neuroallergy has been related to hyperactivity in children. This hyperactivity has been hypothesized to be the beginning of one form of behavior in the child which is labelled as anti-social. Reactions of the family members (possibly including child abuse) and school teachers and administrators to what they perceive as negative behavior further tend to reinforce the anti-social idea in the child's mind. The stress of rejection may further force the child into other forms of anti-social behavior, i.e., delinquency and crime (Murray, 1976; Morris, 1956; Feingold, 1975; Mendelson, 1971; Morrison, 1975; Piness, 1926; Schneider, 1945; Shannon, 1922; Speer, 1958; Wunderlich, 1970, 1973, 1978).

Neuroallergy also has been related to the development of the addictions. These include addiction to any of the common foods, but, in regard to our purpose here, alcoholism and drug addiction in particular.

Refined sugar has been considered to be the most addictive agent in modern society by many authorities (Berjerot, 1972; Coca, 1959; Hoffer, 1975; MacKarness, 1976; Philpott, 1965; Randolph, 1950). Addiction to refined sugar is considered by many to be the primary and original addiction in susceptible individuals (genetically predisposed), leading in later adolescence or adult life to drug addiction and alcoholism (Davis, 1970; Goodhart, 1957; Hoffer, 1978; Olson, 1960; Philpott, 1978; Pawlak, 1972; Smith, 1974, 1978; von-Hilsheimer, 1967; Wunderlich, 1978).

Neuroallergy also has been studied extensively as a causative agent in violent behavior, especially as it relates to development of behavior which easily can be labelled delinquent or criminal (Moyer, 1975; Morrison, 1975; Philpott; 1976, 1978; von-Hilsheimer, 1967; Hoffer, 1978).

Recommendations for Research

It should be emphasized that the literature presented herein is quite limited in scope and in depth. It is a mere beginning. But I simply have not had the resources with which to accomplish the necessary investigation, because it involves so many fields and publications, each with its own specialized technical language and methodology. I feel also that the search should include the wide range of clinical leads which are available, which could be useful in supplementing the research studies. This clinical area also is extensive and varied in discipline.

Because of these limitations of the present literature search, my first recommendation to NILECJ would be to fund a one year project to conduct a thorough search of the literature relative to the biochemistry of delinquency, crime and related forms of anti-social behavior. behavior. The project would require formation of an interdisciplinary team of scholars appropriate to the subject, with provision of some graduate assistants and secretarial staff. This project would allow much more definitive clarification of specialized areas for basic research funding.

On the basis of the present more limited literature search, however, the following areas of current research activity would appear warranted:

1. The primary emphasis of the basic research should be on the biochemical aspects of anti-social forms of behavior, especially hyperactivity in children and violent behavior in delinquency and crime in youth and adults. The focus of the research should be on identifying contributive rather than single causative variables, since human behavior appears to result from a series of interacting factors rather than from a single factor.

In the area of vitamin-mineral deficiencies, special attention should be given to exploration of vitamins B-3, B-6 and C, and the minerals of copper, calcium, magnesium, manganese, and zinc.

In the area of neuroregulators--serotonin depletion, and tryptophan values, should be further studied in relation to violent behavior.

The effects of heavy metals, including lead, mercury and cadmium excesses, should be explored, as should the impact of various forms of radiation (TV and fluorescent lighting).

The metabolic processes related to regulation of blood glucose levels, both hypoglycemia and hyperglycemia reactions, especially should be further studied.

The role of neuroallergy in anti-social behavior also should be investigated further, since this appears to be a most promising lead. Common foods and chemicals related to explosive forms of behavior, in particular, should be identified, i.e., milk, corn, wheat.

2. A secondary emphasis should be placed upon basic research studies of the biochemical basis of addiction, since alcoholism and drug addiction are such important components of the crime scene. The focus here probably should be on the specific cerebral allergens, such as refined sugar, which hypothetically are at the base of all the addictions.

Nutritional deficiencies, especially vitamins B-3, B-1, and C, should be explored as additional stress factors in the addictions.

3. The literature also suggests that anti-social forms of behavior can have an important genetic base. It is felt, however, that the present literature review is inadequate for making specific recommendations in this area, which presents very difficult methodological problems to the researcher. Research in the area of cell structure and hormones show promise. Undoubtedly, this is an area of great importance, but it will need to await the more definitive findings of a broader literature search.

In conclusion, let me say that my investigation of the possible biochemical aspects of delinquency and criminal behavior has led me to conclude that this is an area of research, largely overlooked at this time, which has considerable potential for improving our basic knowledge of the problem. There is a critical need at this hour, I feel, for a concentrated research effort in the biochemistry of anti-social forms of behavior so that soon we may be able to make great practical strides in its correction and prevention. Crime, especially violent crime, is becoming such a difficult national problem, that it would seem wise to establish a national center for criminological research to explore these and other significant new leads to basic knowledge.

Addendum

Personal Areas of Interest

As a criminology and corrections specialist, my professional work over the past 21 years has been equally divided between the scientific investigation of causative factors in crime and the correction of delinquent and criminal behavior. Although by training I am a social psychologist, I became interested in the biochemical aspects of criminal behavior while working on a research-demonstration project at Sumter Correctional Institution in Florida in 1967. The consulting psychiatrist was effectively using B-3 and B-6 vitamin therapy with a number of the inmates. One of my graduate students at Florida State University also wanted to pursue this line of investigation for his research study. However, because of funding problems, he was not able to carry out the planned research.

Much of my time over the past ten years has been devoted to a search of the literature on this subject. My search brought me into many new (for me) disciplines of basic and applied science and applied medicine, especially those relating to mental retardation, birth defects, brain research, behavioral research, nutrition research, biochemistry of the brain and metabolic system, neuro-chemistry, genetic molecular research, psychiatry, preventive medicine, psychopharmacology, and parapsychology.

During this time I have attempted on several occasions to secure research funding support, both for myself and for several students, from state and national public and private sources, but each request has been turned down. I have presented several monographs on the subject to professional groups and published several journal reports and one book (Hippchen, 1978), but these have been designed primarily to interest others to join me in the development of further research in this area.

At the present time I have two research projects under development, both dealing with the biochemical aspects of violent behavior. One has the setting of Mecklenburg Correctional Institution, a facility only recently opened for the express purpose of housing criminals who have committed violent crimes. The second project has the setting of the Forensic Unit of Central State Hospital. Both institutions are located in Virginia. The hospital project has been approved by the director of the Forensic Unit and the research council of the institution and is awaiting funding, which still is difficult to secure in this area of investigation. Two years ago I helped to develop a program to deal with status offenders in the Richmond area, and this program has incorporated nutritional therapy as one of its major approaches to rehabilitation. However, we yet have not been able to secure funding for a research component to this operational project.

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ORGANIC DETERMINANTS OF STRESS AND VIOLENT BEHAVIOR

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In this paper, I shall focus on brain dysfunction as an organic determinant of stress.

For decades, researchers have grappled with the seductive hypothesis that brain dysfunction and crime are related. Attempts have been made to correlate antisocial behavior with psychophysiological parameters. Some of this work has been of scientific interest; little, actually, has been of clinical utility. More recently, Monroe and colleagues (1) have studied violent criminals and isolated subgroups of prisoners who demonstrate EEG dysrhythmias, neurological abnormalities and organic dysfunction as measured by psychological tests. Some of these patients have responded to regimens of anticonvulsants, employed with the rationale that there exists an underlying epileptoid mechanism responsible for the paroxysmal aggressive behavior. (2)

Our own efforts in a violence clinic in Baltimore (3,4) has identified a population of violent patients, many with criminal histories, who also demonstrate brain dysfunction on the basis of EEG data and the tests traditionally used to assess minimal brain dysfunction (MBD) in children. Both Monroe and I adhere to the belief that there exists a state of MBD in adults. This is a concept receiving increasing attention in the literature (5). Follow-up studies of children with MBD (6) have shown that a small percentage retain the clinical hallmarks of the syndrome and continue to demonstrate mood liability and aggressiveness even though it has been traditionally felt that MBD disappears at adolescence and that the deficits associated with the syndrome represent immaturity of the brain. Thus the Explosive Personality we see today might have been, and often was, the hyperactive child of ten years ago. This concept is recognized in the new version of the Diagnostic and Statistical Manual prepared by the American Psychiatric Association. The syndromes of Intermittent Explosive Disorder defines violence as associated with the subtle findings of brain dysfunction. (7)

Past neurosurgical research concerning human limbic system abnormalities and violent behavior in epileptics [8] also gave credence to an organic etiology for some aggressive behavior. However, the linkage of cerebral dysfunction with violence requires much humility; the psychosurgical controversy [9] reminded us that the vast majority of violence and crime in the world is not committed by people with impaired brain function. To extrapolate from isolated cases treated by amydaglectomy is hazardous for one can assume that the "treatment" for violence is brain surgery. Such an inference is socially and politically frightening; worse yet, it is without any scientific basis. It is unfortunate that a moratorium on psychosurgery exists, but there is some indication that it may be lifted and that research can continue.

I have immediately mentioned several emotions evoked by associating violence with brain dysfunction. Generally, the notion is not politically popular. However, it has heuristic value. Any behavior has multiple determinants, and an organic one should always be considered. Unfortunately, the field of psychology tends toward a dichotomy. Thus we have the dynamically oriented clinicians, and the biologically oriented scientists; each view the other with distain. The polarity between the dynamic and the organic should be discarded.[10] Brain function--the ego--is both an abstract concept and a real entity: something makes the person plan, and planning requires cellular integrity. Subtle, slight, minimal alterations in this integrity can affect subtle functions; thus, a good clinician can detect an apraxia or an aphasia and localize parietal or temporal lobe dysfunction or point out defects in perception and cognition.

Now one would easily envision cerebral function to play a role in higher mathematics or skilled motor movements. Does it play a role in as crude a behavior as crime? Regrettably, crime takes skill and force. Some crime seems random and the product of impulsivity. Other crimes seem highly premeditated. I have seen criminals whose cunning was superior to mine, and others whose impulsivity was clearly both dystonic, and pathological. The latter were patients, often prisoners, with labile mood shifts and "hair-trigger" tempers, prone to rage when frustrated, and all-or-none assault when minimally provoked. For these individuals, the difficulties in waiting, contemplating, fantasizing, and reflecting seem formidable; coupled with deficits in other areas of central nervous system function, I cannot help but view the impairment as a stress superimposed on other stresses existing in the environment. It is these people, I think, that are prone to pull the trigger if the victim does the wrong thing. Recall now, that at least one study [11] has made comparisons between aggravated assault and homicide and shown the crimes to be epidemiologically similar. The difference, according to the author, appears

to lie in the availability of the weapon. I speculate here that the organic dysfunction in some individuals may further add risk to the situation.

Now for some disclaimers. Neither Monroe's work, nor mine, has reached a high degree of clinical sophistication. To date, our findings are still soft, if you will, and intuition remains crucial to the assessment of treatable persons. However, I do feel that although the science is soft, the art is harder, and there is sufficient diagnostic enlightenment to justify intervention in patients at risk for impulsivity and violence. Translated, I mean that I as a clinician feel comfortable working to isolate a subgroup of homogeneous patients and look at treatment alternatives. Much more work is needed in this area; prospective studies with activated EEG techniques and pharmacologic regimens are necessary. Unfortunately, there are many obstacles to research. The most formidable is HEW regulations prohibiting the research on prisoners (12) due to implicit coerciveness of a prison setting which infringes upon informed consent. As chairman of a large university institutional review board on human research, I am acquainted with the arguments about prison research. Yet, it always strikes me as paradoxical that society wishes to control crime, yet prohibits clinical investigations of those very individuals who are, according to public policy warehoused for fixed sentences. I thus make a policy recommendation to complement my wish for more brain dysfunction research; namely, that we allow prisoners to volunteer for studies which, admittedly, will be intrusive and invasive. In contrast to cancer research and the limited gains made by basic researchers of this "noble" disease, (remission of some leukemias, lengthening of survival times), little prison research exists in this country in proportion to the magnitude of the problem. Indeed, as Clinard and Abbott point out (13), there are over two million people in the prisons of the world on any one day, and less than 1,500 criminologists engaged in criminologic research on more than a part-time basis.

Yet even if prison research is allowed, it may not work because of an artifically reduced base rate of violence which exists in any institution. Hospitalized, even incarcerated individuals obtain some degree of nurturance from the prevailing milieu. The artificiality of the prison setting and the removal of criminals from the stresses of daily street life poses methodological problems in clinical research. For example, our recent work in testing an alleged antiaggressive drug (14) led us to discard hospitalized patients and focus on out-patients who lived with spouses and worked at jobs and were subjected to "natural" frustrations. I thus make a second policy recommendation; namely that prisoners be allowed to participate in outside research programs as a condition of probation.

Having made these pleas I now discuss what it is that requires research both within and outside of prisons. One organic determinant of stress in crime is very common, and that is the toxic factor of alcohol.

Alcohol impairs brain function to a point of disinhibition; it produces a mild organic brain syndrome which may or may not be clinically evident; yet there exists a phenomenon of pathological intoxication. Here, small minimal amounts of alcohol ingestion produce profound alternations in behavior with rage and temper. Patients with this phenomenon have been studied by Marinacci (15), who has given patients prone to such intoxication beverage alcohol. Marinacci reported activation of a large percentage with temporal lobe spike discharges. In an attempt to study this further, Bach-y-Rita and I (16) administered intravenous alcohol in "blind" fashion to patients with chief complaints of pathological intoxication. Our sample was small and neither behavioral arousal nor EEG activation occurred except in two neurosurgical patients with cortical depth implanted electrodes who also went to sleep; thus, we did not know whether sleep or alcohol activated the EEG. Our interpretations of this finding are that pathological intoxication is a complex disinhibitory phenomenon which involves premorbid personality, environment, and a toxic state. It is still not understood. Nor, however, is simple alcoholism and its role in crime, despite the vast literature on these subjects. It is an accepted fact of probation policies that patients abstain from drinking. But why? Is there such a thing as a latent criminal who is activated by alcohol? Does alcohol influence the aggressive component of crime? Is a simple explanation of disinhibition sufficient to explain criminal propensity? If so, why are other drugs such as marijuana not so ubiquitously linked with crime? Narcotics do not liberate aggression though obviously crime and narcotics are instrumentally linked; that is, crime is committed to procure the addictive substance. However, aggressive behavior with narcotic intoxication is rare.

More work is needed in understanding the precise psychophysiology whereby alcohol and violence is linked. I will go so far as to say that the matter of alcohol and crime is so common that it has been accepted as a truism, and neglected as a phenomenon. Questions enter my mind: how many patients with alcohol-related violence can be identified and distinguished from non-alcohol related violence? If so, what can be done to treat these patients? Should antabuse be used coercively much as methadone is used? Should the pharmaceutical industry be urged to produce long acting alcohol antagonists or agents which react adversely with alcohol, much along the lines of narcotics antagonists? Strong sentiments are mobilized by such ideas.

From the alcoholic and his altered state of consciousness we are a step away from the paraphiliac, the sexual criminal. I say a step away, because the phenomenon of compulsiveness intrudes upon both entities. Dynamically, there are similarities also. Violence surfaces in the alcoholic; rape is recognized as a violent crime and the issues with the rapist is his aggressiveness toward women and his desire to frighten and hurt them, rather than to have sexual relations with them. Comparatively little research has been done in this country with sexual criminals. Even though we know, from work in other countries, that chemical and surgical castration helps a defineable population of paraphiliacs, including aggressive ones (17). In this country, at the present time, experimental programs utilizing progestational agents exist, but are small in scope (18). This is surprising on one level, consistent with concerns about behavior control on another. But if treatment is lacking, so is knowledge. The endocrinologic parameters of these patients are still obscure. For example, there appears to be no correlation between blood levels and clinical aggressiveness.(19) However, hormones do lower serum testosterone and spermatogenesis; both are controlled by the pituitary, and so I surmise that some dysfunction is corrected, or some function altered, and I mention this as an organic determinant in crime. I currently treat an exhibitionist; he is compulsively driven to exposure, and I of course worry about his progression from exposure to assault, though such a progression is rare. Yet something is wrong with him; his urges overwhelm him, and he is driven to act. That, I submit is brain dysfunction in the sense that he cannot control an impulse. More work in these areas is desireable.

To summarize: Brain dysfunction is a subtle concept, an old one, a logical one, a dangerous one. The potential identification of a small subgroup of criminals showing violent propensities and demonstrating the characteristics of minimal brain dysfunction may be worthwhile. The value lies in treatment. Treatment requires a subject population, and changes in social attitudes toward the use of prisoners, both within and outside of prison.

A ubiquitous model of brain dysfunction is seen in the disinhibitory state of alcoholism, a parameter long linked with crime. The axiomatic quality of this association betrays a lack of phenomenological knowledge.

The use of hormones to control sexual aggressiveness points to a metabolic phenomenon which is cerebrally controlled; a model of "brain dysfunction" is invoked.

The tampering of human aggression mobilizes many societal concerns, particularly when brain dysfunction appears as an etiology. Humility, solid methadologies, and adequate peer scrutiny and public relations are requisite.(20, 21, 22)

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A NOTE ON PRISON STRESS

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This working paper rejects--or fairly heavily qualifies--the "structuralist" position to prison stress, which places emphasis on "built-in" stressors affecting inmates and some prison staff. The paper presents a "transactional" or relativistic view, a view that highlights differential inmate vulnerability to stress, and assumes differential stressor properties (or ameliorative capacities) of prison settings. I shall try to outline, in conclusion, some research strategies that accommodate my perspective.

The paper is of necessity impressionistic. This feature is not a corollary of the paucity of literature. The transactional approach to stress and to coping has inspired considerable work, particularly in environmental psychology. If I reviewed this material, the result would be a long preamble with a modest point. I would face similar dangers if I described past prison research, including my own. I shall have to assume that the reader knows some of the work that has been done, and that we can look toward the future, and the possibilities it offers.

Why Be Concerned About Prison Stress?

The most prevalent assumption about prison stress is that it leads to untoward personal reactions that make it awkward to administer a prison. These reactions include inmate social "adjustments" that create hostile subcultures unreceptive to prison programs. Stress is cited as a precursor to crises such as prison riots. Less frequently mentioned stress impacts include, (1) the precipitation of mental illness in susceptible inmates, (2) self-insulation and stress-skewed preoccupations that reduce program participation, (3) psychosomatic symptoms that lead to unnecessary levels of medication, (4) personal problems that are ego-deflating and impede social learning, (5) suicides, self-injuries and other self-destructive conduct, (6) disciplinary violations and other inappropriate mobilization of resources, and (7) inmate violence--particularly, preemptive self-defense.

These last seven impacts are not as generic as those customarily reviewed, but they are (or should be) equally unwelcome to prison administrators. The same holds for staff reactions to stress, such as absenteeism, inefficiency, inmate-staff conflict, and overdetermined labor-management conflict. In this connection, an important difference is that staff live in two worlds. Job-related stress can manifest

itself outside prison, and outside stressors (such as alienated spouses) can result in performance decrements. Experts often overlook these facts.

Some hairy stress problems arise in relation to "punishment" aims and their corollaries. Given currently prevalent sentencing goals, (e.g., "just deserts"), there is a presumption that prisons must be uncomfortable. There are other legal norms, that proscribe "cruel and unusual" penalties, or that prescribe minimal standards of humane incarceration. Courts may also take interest in specific sources of stress, such as disciplinary segregation and inmate attacks on other inmates. Outside scrutiny and professional standards confer on prison administrators the responsibility to review stress-properties of institutional practices (or staff failures to intervene) with a concern for stress prevention.

In this connection, it is relevant that prison standards are always generically couched. The questions that arise are, "is solitary confinement detrimental to mental health?" "are single cells (or dormitories) inhumane environments?" "is psychotropic medication (or the unavailability of it) reflective of institutionalized cruelty?" Given the fact that one person's stress is (within limits) another's nonstress, research on differential impact becomes urgent in this area, because court decisions involve arbitrary judgements about consequences of stressors.

The "Pains of Imprisonment"

The prison expert's perspective has been influenced by Goffman's view that total institutions subject inmates to "a series of abasements, degradations, humiliations and profanations of self" (Goffman, 1961, p. 14). The assumption is that these experiences produce "secondary adjustments" among inmates that are designed to rescue their integrity and self-respect. Equally influential has been Sykes' study of prisons, which lists salient deprivations suffered by prison inmates. These salient "pains" include (1) deprivation of liberty, (2) deprivation of goods and services, (3) deprivation of heterosexual companionship, (4) deprivation of autonomy, and (5) deprivation of security. Sykes (like Goffman) assumes that stress involves assaults to self-esteem, and that defensive reactions occur to neutralize such stress. He writes that "if the rigors of prison cannot be completely removed, they can at least be mitigated by the patterns of social interaction established among the inmates themselves. In this apparently simple fact lies the key to our understanding of the prisoner's world" (Sykes, 1958, p. 82).

In introducing his "pains of imprisonment," Sykes allows for differential vulnerability. He writes that:

> It might be argued that in reality there are as many prisons as there are prisoners--that each man brings to the custodial institution his own needs and his own background and each man takes away from the prison his own interpretation of life within the walls. We do not intend to deny that different men see the conditions of custody somewhat differently and accord these conditions a different emphasis in their personal accounting.

He concludes, however, that "the dominant fact is that the hard core of consensus is expressed by the members of the captive population with regard to the nature of their confinement" (Sykes, 1958, p. 63).

In the face of this assertion, there are cues as to the importance of differential vulnerability to prison stresses. Two dramatic cues have to do with (1) the literature highlighting stress themes for female (as opposed to male) inmates, and (2) the advent of the importation hypothesis (Irwin, 1970) which describes different adjustment modes among inmates who have different free world backgrounds. The literature on womens' prisons is particularly instructive. While portraits of women's stresses do not invalidate Sykes' roster of "pains of imprisonment," they suggest that prison pains can be differently prioretized. Women thus seem to have a preponderant concern with the deprivation of companionship, but suffer minimally from deprivation of security. Their favored modes of adjustment to stress also differ. While women inmates may define "easy time" as including a decathexis of relationships with significant others. (Giallombardo, 1966), male inmates more frequently find outside contacts sustaining and stabilizing (Glaser, 1964). Similar distinctions occur within prison populations. Young inmates find sociability ameliorative, while older inmates seek solitude (Glaser, 1964). Older inmates are disporportionately stressed by violations of privacy and lack of structure in their environments. Younger inmates are more responsive to deprivations of autonomy, and are favored targets of deprivation of security (Toch, 1977). In extreme cases, inmate differences can be pronounced. Inmates of Latin extraction may thus often suffer emotional breakdowns in response to family problems, while schizophrenics (in prisons, as in hospitals) may have their pathology aggravated when their environment contains high noise levels or danger cues (Toch, 1975).

The same stressor can differently impact different subpopulations. Solitary confinement can produce panic in black subpopulations who are comparatively resistant to other stressors (Johnson, 1976).

Segregation can be experienced by some inmates as a positive and regenerative opportunity (Suedfeld, 1974), at least, in retrospect. This fact is especially significant because of its broader implications. It suggests that antisepsis in environmental engineering can delete growth-promotive experiences for some while it removes threats for others. This fact is highlighted by studies (such as Rodgers, in press) which show that rehabilitative impact of interventions such as furloughs is neutralized when inmates remove all stress from the experience, and thus deprive it of challenge and social learning value. The same point holds for "congenial" prison settings in which inmates "coast" (Glaser, 1964). The case can even be made for the fact that parole experiences are nonrehabilitative where inmates are allowed to neutralize all possible stressors (such as joblessness and family responsibility) by means of psychological denial.

The Architectural Fallacy

It is paradigmatic in transactional psychology that any external definition of stressors (an outside observer's perspective) cannot be very predictive of stress. Stress results when I experience an environment I find difficult to negotiate, and someone else cannot know (1) what environmental features will be salient for me and (2) what coping skills I can marshall. My experience of living in my environment is also different from that of the observer, who is a tourist or a spectator.

Prisons invite casual stress predictions because they are relatively depressing to observers. A prison visit is a stultifying experience, and a mega-prison is more depressing than a pastel-painted set of cottages. This contrast makes it inviting to assume that prisons are less stressful if they are more attractive or smaller. We become fascinated by variables such as the confining attributes of cells or the noisy ambience of dormitories. This fact itself should give us pause, because the noxious qualities we deplore (lack of privacy and isolation) are virtually opposites.

My point is not that prison architecture is irrelevant, but that detailed research is needed to tease out its contribution, and that existing studies (e.g., Nagel, 1973) have not exhausted the possibilities of such research. Pending the availability of further inquiries, I venture the following assumptions: (1) the <u>real</u> environment is the <u>immediate</u> environment of the inmate or staff member. A large, depressing prison is the counterpart of a large, depressing city. Both comprise neighborhoods in which the features of the total environment are not present; (2) variables that determine stress include people, activities, temporal dimensions; they include relationships, responsibilities, challenges, roles. They include peers, superiors, conversations and

silence, food and rest. Such variables are not predetermined by bricks and mortar, though they may be circumscribed by them: (3) stress is a function of the inapplicability of past adjustment modes. What makes the prison disruptive for the observer, may not have comparable effects on persons of different backgrounds. A country setting, for example, may inspire us to poetry, but urban inmates may prefer a fortress to the pastures we find soothing. On the other hand (to recall our second point) the urban inmate may like our camp despite its setting, because its custody level is lower or because the work is less monotonous than prison labor.

The "Country Club" Fallacy

The "outsider's" assumption of what is non-stress can be as suspect as his guesses about stress. This point was made in the nineteenth century by the Reverend Sydney Smith, who observed that "the alderman's sarcasm of the Turkey carpet in jails was bandied from one hard-hearted and fat-witted gentleman to another." Smith notes that an inspection of the jail being touted as a country club revealed "scenes of horror, filth and cruelty, which would have disgraced even the interior of a slave-ship" (Smith, 1821, p. 155). Ironically, Smith exemplifies the observer's fallacy in his own views. He is offended by the notion that pretrial inmates should be forced to work, and advocates leisure in jails. The distinction has survived in the shape of boredom and inactivity in detention facilities. Smith proclaimed that "a prison should be a prison--a place of sorrow and wailing" (p. 159); he wrote, "a jail should be a place of punishment, from which men recoil in horror--a place of real suffering, painful to the memory, terrible to the imagination" (p. 156). Smith asked, "if men can live idly, and live luxuriously, in a clean, well-aired, well-warmed, spacious habitation, is it any wonder that they set the law at defiance, and brave the magistrate who restores them to their luxury and ease?" (Smith, 1821, p. 156). It was Smith's theory--shared by prison reformers of his day--that nonstressful prisons must lead to recidivism. He argued that "you may make a jail such an admirable place of education that it may cease to be infamous to go there," (p. 159) and he complained that "here are men who come out of jail, and ask, "Look at us--we can read and write, we can make baskets and shoes, and we went in ignorant of everything; and we have learnt to do without strong liquors, and have no longer any objection to work; and we did work in jail, and have saved money, and here it is. " (p. 159). "What," asked Smith, "is there of terror and detriment in all this? and how are crimes to be lessened if they are thus rewarded?" (Smith, 1821, p. 159).

The reason why I belabor the views of this obscure essayist is that he makes very free with assumptions about what's stress-free, and links his assumptions to hypothesized impacts.

There is, however, another reason for highlighting Smith's views. For curiously Smith proposes research, and what he proposes has not to date been done. Why not--asks Smith in 1822--compare recidivism figures for institutions with different living conditions? Why not study the impact of different conditions of incarceration, such as solitary confinement with country views versus confinement in which inmates must stare at empty walls? Why not also consider inmate backgrounds, (Smith had never heard of base expectancy measures) in assessing prison impact? "Recommitments," he wrote, "will of course be more numerous where prisoners are received from large towns, and from the resorts of soldiers and sailors; because it is in those situations that we may expect the most hardened offenders. The different nature of the two soils which grow the crimes, must be considered before the procedure gathered into prisons can be compared" (Smith, 1822, p. 163).

Three Tangential Comments

The passage I have quoted leads directly to research issues, but I shall defer these (for the moment) to pose three unrelated questions that have research implications. The first is the issue of prison staff, who invite solicitous attention from stress-reduction practitioners, whose appetites have been whetted by their favorable reception in police cricles. The stress reduction concern is premised on (1) analogues drawn between police and prison guards, and (2) data about various stress indicators (such as coronaries and marital disharmony) allegedly present among prison workers. I have already commented on the second point, noting the difficulties of attributing staff stress to work-related stressors. Even if it were established that correctional officer incidence of heart ailments were disproportionate, it would be necessary to verify whether officers-in-general (or those immediately affected) suffer from obesity problems, are disporportionately unmarried, etc.

The police-guard parallel is especially flattering to guards frustrated by not being police officers, but it must be viewed cautiously. Correctional and police officers exercise wide discretion, work shifts, may be entitled to invoke formal sanctions, and spend disproportionate time on service activities that are not highlighted in job descriptions. These similarities, however, disguise critical differences it is important to eventually examine. The guard's life is more structured than the policeman's, his shifts are more regulated, and his violence-involvement rare. Prison jobs may

feature some stressors (such as role ambiguity), but these must be located through independent inquiry rather than being deduced from police work.

My second point is a paradoxical one. It relates to inmates with a history of violence and/or serious and bizzare commitment offenses. For such inmates, a concern for staff is the relative stresslessness of prison (or more accurately, the difference between prison stressors and free world stressors) which precludes the "testing" of a person's violence potential prior to his or her release from prison. The opposite problem is posed among inmates who explode in prison (or show indications of being stressed), and who may be reacting to prison-specific stimuli. In both cases, caution must be exercised in extrapolating from prison reactions to predictions of future conduct.

My final point has to do with ameliorative prison subsettings. There are several studies (Seymour, 1977; Lansing, Bogan and Karacki, 1977; Marrero, 1977; Trickett and Moos, 1972) which point to the potency of protected enclaves in prison--prison "niches"--for the reduction of experienced stress in inmates. Such settings may feature increased autonomy, privacy, safety, activity or other commodities of which some inmates stand in disproportionate need. In this regard, a distinction must be drawn between specially created enclaves (homogeneous settings, protection units, therapeutic communities, etc.) and settings that arise spontaneously, without staff design. Both types of subenvironments deserve special study.

This final point brings me back to research issues.

What About Research?

Taking a cue from our friend the Reverend Smith, we can first drool over ideal-type experimental designs, in which (1) matched groups of inmates, with (2) each matched set featuring a homogeneous set of characteristics, are (3) exposed to variations in prison environment characteristics, with (4) inventories taken of inmate reactions to different settings, and (5) follow-up inquiries into longterm impacts (recidivism rates, adaptations to the free community, indexes of mental health or illness, etc.) of prison experiences. Moving from the ideal to the real world, a few researchable questions that come to mind are the following:

(1) What are the differential inmate susceptibilities to hypothetical stressors? In recent unpublished research, a former colleague (Robert Johnson) interviewed most of the inmates awaiting possible execution on a prison

death row. Similar studies could also be conducted in less drastic subsettings, such as kitchens, dormitories, reception centers and segregation tiers. The work could include contemporary and retrospective (debriefing) surveys, and could feature validation of reports through physiological indicators. Correlates of stress could include personal histories and personality inventories. No control group is needed.

(2) How is stress ameliorated? This area is attractive because it invites action research, which includes experimental variation in stress-reduction options (programs) for certifiably stressed inmates, with measures of impact.

(3) Can stress be prevented? One clearly useful strategy is to invite staff (particularly, correctional officers) to locate inmates-in-stress and to inventory the "cues" used by staff in making such assessments. This procedure is similar to that invoked by suicidologists and crisis "hotlines" for assessing lethality.

(4) Can constructive anxiety be generated, and can we avoid paralyzing anxiety, to promote social learning? This issue is germane to rehabilitative efforts, such as furloughs, therapeutic communities, halfway houses and enriched parole programs. The prescription involves combinations of "reality rub-ins" (Redl, 1966) with supportive counseling. Coping measures are the dependent variable.

(5) Who are stress-susceptible inmates? If one uses a truly epidemiological approach to stress in entire institutions, the records of stressed inmates can be examined for predictors of vulnerability. If we have sparse classification data, intake procedures may require supplementation to facilitate this task.

(6) Given a shared stressful stimulus (such as a riot) what are the behavioral patterns generated by stress, and what are the correlates of differences in stress-induced behavior? Who becomes aggressive, intrapunitive or withdrawn? Is such behavior immediate or delayed? How does behavior relate to stress experiences and physiological indicators?

(7) Are variations in prison environment correlated with differential stress-inducing properties (among equivalent inmates)? This issue is not only close to that broached by Smith, but it is reminiscent of current NIMH sponsored research comparing blood pressure levels in dormitory and single-cell settings. Of particular interest would be the impact of prison modules and different types of work assignments as well as of different "climate" characteristics.

(8) What is the relationship of stress patterns to inmate career points and stages of prison adjustment and stages of prisonization? It stands to reason that prototypical stresses occur early in prison careers (as does entry shock among less sophisticated inmates), at the midpoint of an inmate's sentence (hopelessness among longterm prisoners) and close to release times (parole-related anxiety, gate fever, etc.). What are stimuli that provoke prevalent stress experiences? What coping strategies are used by inmates who experience less stress in comparable situations? What environmental situations are (or could prove) ameliorative of stress? An analogue to such questions would be inquiries into the "seven year itch" in marriages, or into post-retirement depressions.

(9) How does a past history of being stressed (or of succumbing to stressors) bear on susceptibility to prison stress? Is the situation comparable to inmate violence, where there are outside-inside continuities and discontinuities? Is special programming indicated for inmates on the basis of stress-related histories?

Finally, let me achieve a satisfying round number of questions:

(10) Can we arrive at inter-connected typologies of stressors, vulnerabilities, stress-perceptions and stress reactions? I have been told that (with human help) computers can cluster data in suggestive ways. Given the heterogeneity of stress-relevant data (demographic, physiological, phenomenological, situational) empirical configurations of such variables might (or might not) prove meaningful.

Postscript

I know that my research roster is--at best--propaeduetic. Its inadequacy is its sole virtue: Good research is, and must be, original. Such research derives from good researchers, who (given who they are) must design their work, free of outside "guidance" and influence of sponsors.

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THE INFLUENCE OF ECONOMIC STRESS ON CRIMINAL AGGRESSION

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A. Theoretical Approaches

1. Perhaps as many as seven different theoretical viewpoints on the causation of crime have a direct bearing on the question of the influence of changes in the economy on criminal behavior. These theories concern (1) economic loss, (2) comparative decline in socio-economic status as a result of greater gain in such status by the majority of the population, (3) the development of delinquent careers as a result of reduced opportunity in legitimate sectors of the economy, (4) frustration-aggression theory, (5) development of sub-cultural deviance in both values and normative patterns as a reaction or "reaction-formation" to lack of social-economic integration, (6) differential association theory, and (7) urbanization and economic growth, potentially leading to poorer community integration.

2. The connection between economic change and criminal behavior, as indicated by these theories, is as follows:

a. Economic loss. This is essentially the situation of decline in national income and employment levels. The model of "economic rationality" would argue that illegal activities represent a series of industries which come into play when other societal industries decline. This series of illegal industries then is thought to expand and contract in inverse relationship to the expansion and contractions of the general economy.

b. Comparative decline in socio-economic status as a result of greater gain in such status by the majority of the population.

The argument here is developed from Merton's theory of anomie. This theory specifies that deviance, including "innovative" (in large measure illegal) behavior emerges as a result of disjuncture between social values, or goals, and the social-structural means of attaining them.

During periods of economic decline, many individuals have less opportunity to meet social goals; they thus become potential "innovators" under these conditions. At the same time, the rate of innovation should increase as a result of large-scale and comparatively rapid

economic growth. This victimizes a substantial proportion of the population unable to participate in that growth due to lack of the necessary education or acquisition of employment skills appropriate to integration into the economic system, at least at a moderate wage level. Both of these theoretical derivatives from Merton's theory apply to the economic change situation, but in somewhat contradictory ways. The first derivative would specify increases in crime during economic downturns, while the second would specify increases during intermediate-range periods of general economic growth. However, in this theoretical conception, it is the second derivative that is held to be the more significant for crime because the most numerous criminal sub-population is theoretically imagined to be of low socio-economic origin (due to less effective socialization efforts).

c. The development of delinquent careers as a result of reduced opportunity in legitimate sectors of the economy. The classic piece of writing on this subject is Cloward and Ohlin's Delinquency and Opportunity, which specifies that delinquency occurs as a result of lack of economic opportunity within legitimate industry, as well as the lack thereof among organized illegitimate industries. The connection with economic conditions is straightforward. During periods of economic contraction, jobs and legitimate income will be less plentiful which will result in the tendency toward criminal behavior. The well-organized criminal activities (typically prostitution, gambling, drug traffic, and black market activity in general) are not open to the potential newcomer--both because entry into them is highly controlled (they have been established prior to the onset of the economic contraction), and because of increased competition for entry into that illegal labor market.

d. Frustration-aggression theory. This traditional hypothesis relates to essentially nonutilitarian violence (though there is little reason why it could not be extended to include instrumental criminal acts). It originates with the discipline of psychology as a result of attempts to develop a theoretical connection between psycho-analytic and learning theories of the tendency toward aggression. The basic idea is that frustration represents a blockage, or thwarting, of aspirations and expectations in general. Such frustration then results in a psychophysiological response of the aggressive (or "fight") variety. This aggressive response is thought to be common to many animal species, yet is influenced by genetic and socialization factors particularly as to the direction and subject of the aggressive attack. The theoretical structure of this hypothesis has not been completely developed (especially the psychochemical mechanisms), and alternative psychophysiological theories of aggression have been proposed (e.g., based on loss or attack): yet this theory continues to command substantial scholarly respect among the disciplines of psychology, psychiatry and ethnology. This hypothesis can be applied to either of

the two derivatives of Merton's theory of anomie discussed above, as in Henry and Short, Suicide and Homicide.

e. Development of subcultural deviance in both values and normative patterns as a reaction or "reaction-formation" to lack of social-economic integration.

This theory was developed by Albert Cohen as an expansion of Merton's theory of anomie where the reference is to "rebellion," or an attempt to overturn social values which cannot be fulfilled in the current social-structural setting. Cohen offers the psychoanalytic view that in order to safeguard the mental integrity of an individual or group, a substitute and often contradictory conception of reality is developed. In the case of the juvenile subculture in particular, there is thus a substitution of values with a rejection of adult, middle-class emphases on legitimate means of achievement for an advancement of youthful achievement and masculinity via criminal gain at high risk. Once the delinquent subcultural value system comes to be established, norms for the regulation of social life thereafter tend to denigrate the economic achievement values of the larger culture.

This theoretical perspective, while specific to delinquents in a juvenile subculture, is applicable to the establishment or maintenance of a great variety of illegal subcultures, especially those with a set of ethnic and lower-class subcultural distinctions.

The influence of economic change on the development of such deviant subcultures could occur either as the result of (1) comparative economic loss among specific subgroups in relation to the general population, or (2) comparative lack of economic gain in comparison to that in the general population.

f. Differential association theory. This is a theoretical position initially advanced by Sutherland in order to explain the method by which criminal subcultural norms come to be diffused, especially among youth. The argument is almost atheoretical in the sense that it is descriptive of the mechanisms by which individuals become familiar with criminal subcultures. This must certainly occur through extraordinary contact with those subcultures.

This type of theoretical orientation becomes particularly useful on consideration of the effects of unemployment. Where an increased number of individuals lose employment and income, they will tend to join the ranks of those who are more chronically unemployed or of low income, for whom the tendency toward illegal activity is already established. The linkage of the association of these newcomers with an already developed illegal subculture will tend to bring about an

increased diffusion of skills, contacts, motivations, and technologies linked to criminal activity.

g. Urbanization and economic growth. The area of urbanization and economic development has probably been the largest single source of theoretical development in the social sciences. From the works of Toennies, Durkheim, Weber, Simmel, Wirth, and others there has developed a long-held assumption that the urbanization processes inherently contain elements of social disintegration and pathology. The basic notion appears to be that the bonds which traditionally united elements of the society, namely those relating to family, kin, and ethnic group, gradually lose their importance as society becomes industrialized and the power base shifts from kinship sources to those connected with the national political economy. In the course of this political transformation, the fundamental indicators of social position change from those ascribed, on the basis of kin relations to the social structure, to those based on economic achievement in the industrial sector. Thus, increasingly, economic achievement alone comes to represent the definition of social value in the society. An additional result is that those sources of community integration, which were based on kinship and ethnic ties, come to be replaced by those based on economic interrelationships. Therefore, with the long-term development of economic growth, there is a gradual increase in the degree to which social integration is dependent on the economic function of society.

The obvious implication of this conception is that with continued economic growth the entire fabric of social integration becomes more vulnerable to even minor disturbances in the national economy. Thus, social pathology in general and criminal behavior in particular would increasingly come to be explained by instrumentalities of the political economy.

Another important component of urbanization and economic development, which is also instrumental in diminishing the influence of ethnic ties, is that of population heterogeneity. Under conditions of urban economic development, the industrial locations draw ethnically mixed populations from many areas into categories of employment defined only by industry and occupation. Thus, in the same economic region, there will be found groups of very different backgrounds engaged in similar occupations and utilizing the same goods and services made available through the urban network. With this heterogeneity of populations, there occurs subcultural pluralism with a multitude of often conflicting value and normative systems. The subcultural pluralism logically leads to moral relativism on the part of increasingly large proportions of the urban population. The resulting vaugeness is moral values concerning appropriate conduct and goals,

in turn, theoretically would lead to increasing acceptance and practice of behavior previously considered unequivocally immoral.

3. Issues of "rational" versus "irrational" models of criminal behavior as related to economic changes.

The principal sources of hypotheses on which the present work is based derive from the medical and psychological disciplines (psychobiological) on the one hand, and the economic, sociological and political (sociocultural) on the other. The psychobiological formulations center around the impact of psychological stress on aggression, especially violence. In this mechanism, stresses which overwhelm the individual tend to bring about behavior which is corruptive and irrational in the sense that it is not under the control of the individual.

The sociocultural view, by contrast, is that economic and political conditions change in such a way as to make it more probable that the individual will resort to illegal methods in order to gain income or social position. These processes are at least assumed to be "rational," or under individual control. The conception of illegal injury, whether it involves violence or deprivation of property, is that it represents a form of aggression. The mode of aggression used may itself be comparatively "irrational" or "rational" but it is rarely either purely one or the other. Probably both psychophysiologic and instrumental gain is influencing the criminal behavioral process. Moreover, it is not easy (nor perhaps even correct) to discriminate between psychophysiologic and material gain.

The position taken in this research is that the criminal behavior attributable to economic change contains elements of both psychological stress and the means of coping with it through either violence or comparatively utilitarian crime. In this sense, both the psychophysiologic and sociocultural models are operative. In this conception a property crime could well be considered an act of violence, or injury against another person, though not involving immediate physical harm. The loss in property, however, could ultimately result in substantial psychological harm.

Nevertheless, different forms of criminal responses to economic stress could be categorized by the degree to which conscious or unconscious factors dominate the response pattern. In this case, the degree of "rationality" does not logically depend on the extent of violence in the criminal act. By this we do not intend to argue that such stress-responses represent forms of mental illness, but rather that they are coping mechanisms to overwhelming stress situations of which the criminal subject may be more or less aware. Yet it is probable

that a "solely" violent act without additional criminal implications, such as assault, can be construed largely within the "more nearly irrational" category. Also, it is probable that a solely utilitarian act of larceny may be largely "rational" under this definition.

B. Operational Measures of Theoretical Constructs

In translating the theoretical views listed above into operational measures which reflect on the state of the economy, we are considering six types of measurement. These are:

1. General cycles of economic upswing and recession.

2. Economic instability, or departures from smooth economic growth in general.

3. Change in the structure of economic inequality.

4. The extent to which specific (socioeconomic or demographic) population subgroups tend to gain or lose employment and income during economic upturns and recessions, again as compared with the general population.

5. Secular changes in income distribution among population subgroups.

6. Secular changes in income levels according to population subgroups.

The basic mechanisms alluded to by these sets of measures concern:

a. Changes in the level of economic well-being.

b. Changes in comparative socioeconomic position (or status) on the part of any specific subpopulation to the population as a whole (overall median) or to any other specific subpopulation (reference group, as in Merton).

c. The general extent of economic inequality in a population, where the measure would approximate the standard deviation (among subgroups) of overall population income.

d. The exact profile (pyramidal structure) of income distribution. This issue concerns the relative proportions of income distributed among the various subpopulations which may be inherently pathological or salutary.

e. Economic instability, or the degree to which levels of income and employment, in the general population or in any subpopulation, is subject to fluctuation. From a psychological standpoint, this is a problem of coping with, or adjusting to, situations of change per se. These economic instabilities are measured by the absolute difference between smooth economic trends and the raw economic data that they are taken to represent.

f. Urbanization, as measured by population size, density and heterogeneity.

g. Increasing dominance of the economy as a mode of societal integration as measured by the extent to which national or international economic phenomena are causes of the socioeconomic situation of subpopulations.

Summary of Recent Empirical Research

The trend in unemployment appears to be the most intensively studied economic factor in relation to crime. Thus, property crime[1] and delinquency[2-3] as indicated by reported crimes on the national level, are significantly related to unemployment. Admissions to prisons and the homicide rate also vary with unemployment according to several studies. For the period 1926-1952 admissions to state prisons and the homicide rate for the entire United States and for New York State were positively correlated with the unemployment rate[4]. In the state of Georgia, the prison population was similarly observed to change with fluctuations in the unemployment rate during 1967-1974[5]. The size of the federal prison population was shown to be related to the unemployment index of 15 months earlier for the period, 1952-1975[6]. Again, for the period, 1969-1972, strong relationships were found between the unemployment rate and both federal and state imprisonment for the United States as a whole.

A cross-national comparison of the United States (specifically, California, Massachusetts, and New York), Canada, England and Wales and Scotland, over the years, 1920-1940 and 1947-1973, also substantiated the positive relationship between criminal activity and unemployment[7]. For all four countries, the homicide rate was examined, as were crimes known to the police, arrests and trials, and conviction and imprisonment. For the three states within the United States, imprisonment was examined. Significant relationships with the unemployment rate were found within each country, for every measure of criminal activity, and for both personal and property crimes[8]. Finally, several studies have indicated that unemployment directly influences parole, mandatory release violations, and recidivism[9-10].

The following data (Table I) represent the estimated impact of a one percent increase in unemployment on a sample of crimes and criminal justice statistics. These data were based on equations prepared by the present author in separate studies for the National Institute of Mental Health, H.E.W., The United Nations Social Defense Research Institute, and the Joint Economic Committee of Congress (Table II). These samples of relationships between criminal justice system data and national economic indicators were first presented at hearings of the Subcommittee on Crime, of the U.S. House of Representatives.

C. Measurement of the Effects of Economic Change on Crime and Criminal Justice System (CJS) Activity

1. Measurement of adverse effects of economic change.

a. Fluctuations in the rate of employment and unemployment (in combination with measures related to personal income, we can estimate the Impact of "under employment" or "misemployment").

b. Effects of inflation: annual percentage changes in the Consumer Price Index (CPI).

c. Intermediate range (1-5 years to long-term) patterns of national economic growth. This measure may be inversely related to the crime rate where:

(1) Income distribution is not widened among specific subpopulations.

(2) There are not substantial concomitant economic instabilities.

d. Differential trends in income and employment among the various subgroups.

e. Differences between income and employment levels of selected minority groups, on the one hand, and the median of per capita income and unemployment for the population aggregate on the other.

f. Combinations of several of the above stated measures in order to derive a comprehensive econometric model of adverse effects of economic change.

2. Measures of the incidence of criminal behavior and effects on the CJS.

a. The problem: at any single point in time criminal justice statistics do not accurately reflect the incidence or prevalence of

TABLE 1

ESTIMATES OF THE EFFECTS OF A 1-PERCENT CHANGE IN UNEMPLOYMENT RATES ON CRIME INDICATORS

(Based on the population of 1970)

Selected criminal statistics	Incidence of criminality related to a 1-percent increase in unemployment (1)	Total incidence of criminality in 1970 (2)	Incidence of criminality in 1970 related to a 1-percent increase in unemployment in 1970 as a proportion of total 1970 criminality (3) (3=1÷2)
Embezzlement	5,123	85,033	0.060
Robbery	6,740	118,419	.057
Burglary	8,646	385,785	.022
Larceny	23,151	832,624	.028
Narcotics	40,056	468,146	.087
Homicide	648	16,848	.038
State prison admissions	3,340	67,304	.050

TABLE II - MULTIPLE REGRESSION OF NATIONAL ECONOMIC AND DEMOGRAPHIC INDICES ON SELECTED CRIMINAL JUSTICE INDICES, UNITED STATES

Variable	Sample	Intercept	Dummy constant of trend	Time and log time trends	Percent male population aged 15 to 29	Drug abuse	Real per capita income	Inflation	Unemployment	R^1	DW	F
A. Homicide rate:[2]												
(1) Lag 0-5[1]	1940-73	-7.60	DT 1967-74, 0.14E-1(1.90).		0.30 [3](3.16)		[4](1.56)0.16E-2	(0.92)0.11	[5](2.38)0.10	0.99	2.29	[3]115.6
(2) TJ,[6] Lag 0-5[1]	1940-73	1.02	DT 1967-74 0.18(3.79).[2]	Time, 65E-1 (5.30).[2]				[3](5.30).84	[3](5.00).54	.94	1.88	[3] 47.0
B. Arrest rate:[4]												
(1) Embezzlement	1952-75	-61.4	DC 1952-60 -9.79(3.59)[2]		1.09 [4](1.51)		[3](3.54).023		[3](3.71)2.46	.95	2.03	[3] 75.0
(2) Robbery	1952-75	-85.5	DC 1952-60 -9.56(2.05).[3]		1.88 (1.26)	Hepatitis,[8] 0.53 (1.89).[5]	(0.60).02	(1.22)2.88	[4](1.80)3.29	.98	2.50	[3] 34.0
(3) Burglary	1952-75	-54.3	DC 1952-60, 1.00(.15).		55.3 (.13)	Resident patients,[9] 4.77(.31).	[3](4.08).80	[4](1.47)2.30	[3](3.12)4.22	.97	2.22	[3] 88.0
(4) Narcotics	1952-75	-672.0	DC 1952-60, -76.3(4.29),[3]		653.0 (1.15)	Hepatitis,[8] 5.92 (5.48).[3]	[4](1.73).16	[4](1.77)16.0	[3](2.83)19.8	.99	2.51	[3]103.0
(5) Larceny	1952-75	-149.0	DC 1952-60 -32.8(2.02).[5]		67.6 (.16)	Resident patients,[9] 55.2(1.52).[4]	[3](3.69).17	[4](1.35)5.06	[3](3.50)11.3	.97	2.01	[3] 85.0
C. State and Federal prisons admissions rates[2] (minus 1942-45):												
(1) Lag 0-2[10]	1935-73	-594.5	DC 1967-71, -8.36(8.33).[3]	Time, -2.55 (2.38).[5] Log time, 180.9 (2.93).[5]	1.31 [3](4.27)			[3](3.07)1.57	[3](5.60)1.52	.90	1.90	[3] 23.9
(2) Lag 0-2[10]	1935-65	-577.90		Time, -3.18 (3.14).[3] Log time, 195.5 (3.48).[3]				3(3.53).64	[3](5.92)1.59	.76	1.87	[5] 10.4

[1] 2d degree, polynomial distributed lag equation.

[2] Per 10,000 population.

[3] Significant at 0.01 level of confidence.

[4] Significant at 0.10 level of confidence.

[5] Significant at 0.05 level of confidence.

[6] TJ: Percent of total male population who are ages 15 to 29.

[7] Per 100,000 population.

[8] Cases per 100,000 population reported to CDC, Atlanta.

[9] In state and county mental hospitals with diagnosis associated with drug abuse, per 10,000 population.

[10] Ordinary least squares equation.

crime in society, and that there is a substantial "dark figure" of unmeasured crime; and furthermore that the size of this "dark figure" varies greatly depending on which criminal justice indicator is used. In sum, the CJS statistics represent the "tip of the iceberg" of existing criminal activity, even if we consider crimes known to the police. This problem has traditionally been so overwhelmingly difficult that in comparing nations, provinces, cities, or even subunits of cities, the issues of comparable reporting have prevented accurate assessment of relative crime rates.

b. In the present study, this problem of statistical validity and reliability is handled in several different ways.

(1) While it is true that cross-population comparisons, at a single point in time, are extremely treacherous, there is considerably less danger in assessing trends over time for a specific locality since the same reporting system (with the same biases of reporting) can usually be assumed to prevail during the period of the trend analysis under consideration. Thus, various nations or other regional units may be compared with respect to variations in their trend levels if one does not assume the accuracy of the absolute levels (or rates) represented in the trends, but rather focuses simply on proportionate increases and decreases over time. In addition, multivariate time-series analytic methods have been established to separate the effects of different influences on the criminal statistical trends, and even the problem of trend changes in reporting can to some degree be estimated or at least statistically controlled.

(2) A major safeguard in the assurance of both the validity and reliability of time trends in criminal statistics as they reflect fluctuations in criminal behavior, is the use of multiple statistical indicators of crime drawn from CJS sources. These sources include police, criminal court, and prison. Thus, the range of data include the following indicators: crimes known to the police, arrests, crimes brought to trial, conviction and other dispositions, and imprisonment. All of these data are cross-classified by major crime. A major effort, then, is to observe the degree to which there is correspondence among the various administrative categories of criminal justice statistics in their specific relationships to economic indicators. To the extent that there is good correspondence, we can be relatively certain that the relationships are not based on any one type of measure, but rather that all available sources of criminal justice data point to the same conclusions. This enhances the likelihood that specific problems in the validity or reliability of any single category of criminal justice data will be compensated for by the use of other indicators which do not present the identical problems.

For example, one of the most crucial issues in the validity of criminal justice statistics trends is that they may be influenced by long-term changes in the propensity of the general public to report crime. In particular, it has been suggested that over time the public might have shown a lowered tolerance of (what had earlier been thought of as) comparatively minor crimes, and thus might be more willing to report such crimes to the police. While such a suggestion, if factually accurate, would influence the rate of incidence of certain (comparatively minor) crimes known to the police, it would probably not influence the rate of imprisonment which we would assume to deal almost entirely with relatively serious crimes.

In any case, we would at least assume that as one moved from crimes known to the police to arrest, to prosecution, to conviction, and finally to imprisonment, if the relationships to economic indicators became successively weaker, then the reporting issue may well be the source of the problem. If, on the other hand, there were little differences among these criminal statistical indicators in their relation to the economy, then we would assume comparatively minor impact due to reporting. Finally, if we found that the criminal statistical indicators occurring later in time--the very latest representing imprisonment--showed the strongest relations to the economy, then we would assume that the reporting factor probably does not influence the later indicators (especially imprisonment) yet they may influence the earlier indicators (especially crimes known to the police) to some extent.

(3) A third safeguard in assuring the validity and reliability of the estimated relationships between criminal statistical trends and economic indicators is that they will pertain to a great variety of different crimes--a number referring to violent behavior and another group dealing with property crimes. To the extent that we observe consistency in the relationships across each of the group of violent crimes, and the group of property crimes, we can infer generalizability of the relationships. We therefore counteract the possibility that the relationships are a result of any one type of crime or, as is often the case in this type of research, that a gross figure for crime is used which may indicate the predominant influence of one offense or category of offenses.

(4) A fourth method of assuring validity and reliability in the relationships found is that they will be matched for consistency across four major geographical and political units, namely the United States, Canada, England and Wales, and Scotland. This comparison is particularly pertinent because the Anglo-American legal tradition is common to all, yet the definitions of crime, public tolerance of crime, reporting systems, and criminal justice administrative procedures may vary considerably. We thus control, in part, for the effects

of these differences through a determination of the consistency of the results (while exposing the most important differences in these systems).

(5) One of the most important sources of obtaining validity and reliability of research results using criminal statistical data is to offer comparisons which are derived from outside of the CJS, and are otherwise not subject to the types of criticism that have been directed toward CJS statistics. The data we use in this respect derive from vital statistics of each of our four areas and pertain to homicide. Homicide is a diagnosis, within the specifications of the ICDA, (WHO), by which the attending physician or officially designated coroner ascertains that mortality has occurred as a result of violence done to the deceased by another person. These data have been subject to the least amount of negative scholarly critique and, at worst, probably underrepresent the true incidence of homicide by a small fraction.

In addition, as in the case of the other CJS-derived statistics, the four major political regions are compared. Also, additional multiple checks on consistency of results for homicide are obtained since the data are examined for each of several (i.e., ten) different age groups, cross-classified by sex and, for the United States, further cross-classified by race.

Finally, the homicide data offer a comparison (for consistency in terms of validity and reliability) with CJS statistics on murder in the sense that the homicide data pertain to victims who died, while the CJS data pertain largerly to alleged criminals (apart from crimes known to police).

(6) Another means of checking the reliability and validity of findings is to make comparisons among techniques used to establish the findings in the first place. There are four sources of comparison among techniques: differential trend examination, bivariate versus multivariate analyses, varying methods of establishing significant associations, and observations of the relationships over different spans of time. Altogether, to the extent that consistent findings are obtained among the different procedures, we increase confidence in the findings obtained.

The issue of differential trend analysis involves, first, the difference between removing, versus not removing, secular trends (since there are important schools of thought which suggest one or the other procedure). Also, there is the question of examining different levels (or intervals) or temporal change (1-11 or more year changes) in order to observe at which trend and interval levels the relationships can be found. Can we predict even on an annual basis, and can we predict for very large proportionate changes as well as

medium-size changes? Also, can we predict to moderate-sized changes rather than only to dramatic changes?

The second question concerns the distinction between observing the impact of different economic (and other social) indicators on crime versus observing their combined multivariate effect, where internal statistical controls have been employed. Does the explanation of the interactive multivariate model show consistency with the relationships indicated by simple correlation techniques?

Thirdly, do the two major techniques of over-time analysis, namely regression and spectral, lead to similar conclusions?

Fourthly, do analysis performed over different spans of time, namely 1920-1940 versus post World War II, lead to similar conclusions?

(7) The next source of ascertaining validity and reliability of the findings pertains to explanation and interpretation of the findings themselves. Ideally, it is hoped that the findings are consistent with other established research findings in the area, and with theoretical positions that are most sophisticated given the state of the discipline at that time. In line with these considerations, in following standard scientific procedure one constructs hypotheses derived from previously constructed empirical generalizations and theory and either supports or falsifies them as a result of the research effort.

(8) Again, some of the answers to questions about the reliability and validity of the trend data in CJS statistics is ascertained in connection with the findings of consistency of relationships vis-a-vis measures that are derived independently from the CJS statistics (the exogenous economic and social indicators). Given consistency of findings among all of the many types of cross-classifications of the CJS data in relation to the economic and other indicators, we can assume, in large measure, general reliability at least of the trend components of the CJS data.

(9) Finally, the existence of the consistent relationships themselves, despite the significant reporting problems inherent in the CJS data, would argue that the relationships found are underestimates of the true relationships, and thus the findings could be assumed to be stronger were the data to have carried greater validity and reliability. Yet the findings themselves are very strong in terms of statistical significance and variance explained. It is therefore not difficult to accept the conclusion that these are underestimates, and are thus the most conservative estimates, of the true relationships.

D. Overall Findings

Interaction among the three major national economic indicators (unemployment, GNP, and CPI), and criminal statistics. Summarizing the combined effects of the three national economic indicators on the criminal statistics, it is found that when used together in the same predictive equation, they explain considerably more variation in the criminal statistics than any one does alone. The three economic indicators seem to have both independent effects and interactive effects. Each one of the three by itself exerts a measurable and statistically significant impact on the criminal data. The combined effect of these three indicators is such that for a great many categories of crime more than 90 percent of the variation in trends in criminal statistics can be accounted for. This is often true for the entire period from the early 1900's through the late 1960's, but is especially noteworthy since the Second World War.

For the most part, cyclic fluctuations in employment and income appear to be dominant factors affecting the crime rates prior to the Second World War; but even where they are dominant they may not expalin more than 40-60 percent of the variance in the majority of crime categories. Since the Second World War, however, the effects of economic growth and inflation have been especially pronounced so that in combination with the cyclic economic instabilities, the complete set of three economic indicators frequently accounts for over 90 percent of the variances in the criminal statistics.

The cyclic economic fluctuations, particularly relating to employment patterns, have been traditionally the most important sources of influence on the crime rate. They continue to retain their significance during the last three decades, but become equal in importance to the economic disequillibria and equalities subsumed in the economic growth indicator and including the features of long-term structural unemployment, underemployment, and chronically low and unstable income. Of the three economic indicators, inflation has exerted the least important influence, although that influence has been statistically significant. It has been especially significant in combination with declining, or comparatively low levels of employment and income, since it further acts to reduce real income levels. Inflation is also a variable which, during the last few years, has shown very great potential for economic disruption at a level at least potentially equal to that of unemployment or economic inequality.

Postscript: Secular Trends in Crime and Problems of Youth Employment

"Economic stress",--signifying material privation--has traditionally been understood as a major source of criminal activity. Since the Second World War, however, we appear to be experiencing the paradox of long-term increases in statistics on crime rates against a background of secular increases in real per capita income. Therefore, to the extent that, economic stress continues to be an important influence on criminal statistics, it does not appear to be a result of deprivation of goods and services per se.

In terms of the long-term trend in statistics on crime, as we probe more deeply, we observe that in the United States, as in many industrialized countries, the long-term trend is generally downward for the age groups over 29, and upward for the groups aged 15-29. If economic stress is defined more broadly to refer to deprivation of socioeconomic position, rather than only material deprivation, it becomes possible to explain the trend in the crime statistics of the under age 29 group despite--or rather because of--long-term economic growth.

Long-term economic growth has resulted in: (a) an overall decline in the requirement for labor and (b) an increasingly more technically sophisticated work force, appearing to require ever-longer periods of education. These two implications of long-term economic growth have given rise to a secular trend of decreased labor force participation for the 15-29 aged population. A large proportion of this population, if not in school, is either unemployed or not in the labor force. This situation, in turn, has meant that a substantial proportion of the 15-29 age group does not occupy defined social positions--or socioeconomic statuses--with articulated social responsibilities and mechanisms of securing those items of value which are culturally appropriate to this particular age group.

For youth of lower socioeconomic status for whom higher education is generally not a realistic possibility, there is only the potential remuneration from employment which can be used as a substantive indication that they have a defined place in the society of some value. Having a position of some social significance is critical for youth between 15 and 29 years of age, since it is precisely this period which represents the transition to adult social status.

The lack of social responsibility that naturally arises through participation in work life (or higher education) leaves the unemployed young person with a minimum of social controls, so that the pressure to secure some of the attributes of adult status (e.g., money, automobile, fashionable attire, etc.) through illegal means can be quite substantial. That temptation becomes especially great for youth who

possess little in the way of academic or social skills and who feel that, in terms of a promising future in the society, they have been left behind. For such people the risk of loss, or potential loss, of social status is minimal indeed when compared with the potential short-term gains they may visualize in illegal activity.

Thus, simply on the basis of the economics and demography of youth employment and social status over the last four decades, it might be possible to develop an understanding of trends in criminal statistics.

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CRIMINAL BEHAVIOR, ARREST, AND LIFE CHANGE MAGNITUDE

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Many students of criminal behavior have focused on the relatively stable characteristics of populations selected by the criminal justice system. (1, 2, 3, 4) Individual and environmental factors associated with this population include body configuration, socio-economic class, educational achievement, gang membership, race, opportunity, and personality. Criminal behavior has also been observed to fluctuate in time for most individuals: (5) few are continuously criminal and many may experience a single criminal act in their lives. (6)

Some investigators have developed "adaptational" models to account for these observations. (7, 8, 9, 10) In these models, criminal behaviors are viewed as potentially adaptive responses to the life situation, given the appropriate set of predisposing features.

This paper describes the application of a quantitative method for assessing the life situation surrounding criminal behavior and subsequent arrest. A formal approach to the study of life events and their temporal relation to medical illness was pioneered in the laboratory of Holmes and his co-workers. (12) Beginning with a study of 5000 patients, these workers examined the quality and quantity of events which occurred prior to the time of illness onset. It was observed that clusters of events requiring change and adjustment preceeded the onset of pulmonary T.B., cardiovascular and skin disease, hernia, and pregnancy. (11) The Schedule of Recent Experience (SRE) lists the events which contributed to the cluster. It includes a wide range of social and personal events relating to family, job, religion, health, and life style.

Early work with the SRE suggested the desirability of weighting the events according to the required adjustment: death of a spouse was clearly more demanding than a change in eating or sleeping habits. The Social Readjustment Rating Scale (SRRS) was devised from a study of number estimates for the amount of change and readjustment involved in each SRE event (12) Cross-cultural studies later showed the SRRS values to be a reliable index of a general consensus about the relative magnitude of the SRE events.

In the last ten years, the methodology of the SRE has been widely applied to the study of medical, surgical, and behavioral disorders. Life change has been shown to relate linearly to both the onset and severity of disease.

This report summarizes the pilot application of the SRE to the study of criminal behavior and subsequent arrest.

Method

The SRE was used to collect data on the quantity and quality of life events experienced in the years prior to arrest and incarceration for criminal behavior. Three sources of data were collated for comparison: juveniles (N=334) completed a modified SRE for the year prior to the crime for which they were currently detained in a juvenile facility; (15) adult males (n=30) referred for psychiatric evaluation and awaiting trial for felony crimes completed an annual SRE history for each of three years prior to the crime of which they were accused; convicted male felons (N=176) in state and federal prisons completed the SRE for each of five years prior to their current incarceration (16). Prisoners also reported on each of five years subsequent to the onset of their current incarceration. Characteristics of the three study samples are shown in Table 1.

For the analyses of this report, it was desirable to compare the experiences of incarcerated samples with non-incarcerated, "normative," samples. Normative data was obtained from 104 junior and senior high school students, as well as 25 working class adult males drawn from a local industry and a national television audience.

Both students and adult normative males were matched in age, sex, and race to the incarcerated groups for comparative study. Those normative individuals whose SRE reports indicated a recent jail term were excluded. In the comparison of the mean annual Life Change Unit scores of incarcerated and normative samples, both samples were screened for individuals reporting significant illness or injury.

Life event frequency data from the SRE was analyzed in two ways. The Life Change Unit (LCU) score for each person was computed as the total of all events experienced in a year multiplied by their SRRS values. For example, one change in eating habits added 15 LCU to the total score, whereas two changes in eating habits added 30 LCU to the total for that person. Alternatively, the overall mean annual frequency of each event was used to study the distribution of life change experiences in the various criminal groups.

Crime severity scores for juvenile offenders based on crime severity codes from the Utah State Juvenile Court were calculated as the product of two scalar values. One value represented the result of the offense, while the other was derived from the type of victimization.

TABLE 1

CHARACTERISTICS OF THREE INSTITUTIONALIZED SAMPLES

	Juvenile Detention[1] (N=334)	County Jail[2] (N=30)	Prisons[3] (N-176)
MEAN AGE RANGE	15.5 yrs (13-18)	25.6 yrs (14-36)	32.7 yrs (21-65)
Sex: Male	77%	100%	100%
Type of Crime			
Status	24%	N.A.	N.A.
Public Order	20%	N.D.	15%
Property	35%	17%	28%
Against Persons	21%	83%	53%
Assault	N.D.	63%	49%
Murder	N.D.	20%	4%

N.D. - No Data; N.A. - Not Applicable.

[1]Kulcsar (1976); [2]Petrich and Hart (1978); [3]Masuda et al. (1977)

Results

1. Comparability of two samples of incarcerated adult males.

Table 2 shows the mean number of SRE events reported by the two incarcerated samples, for each of three years prior to the current incarceration. Jailed felons (N=30) are compared here to the comparable cohort of prisoners, (N=74), age 21 to 35 years.

There are no significant differences in the number of events reported by these groups, despite the fact that prisoners reported about a period which, in some cases, occurred five years past, whereas jail inmates reported about their life experiences prior to a crime committed in the last week or month.

2. Annual life change score of normative versus incarcerated adult males.

Figure 1 shows the life change score (LCU) calculated for each of three years prior to incarceration for a selection of young men from the jail and prison samples (N=30). Four men were excluded from the normative sample for reports of "personal illness or injury" in the year prior to the survey. Men in the incarcerated group were similarly screened for more than a single illness or injury in the last year, age over 35 years, non-white race, and more than technical school education.

The mean LCU scores reported for year two and three are indicated by the horizontal line for both incarcerated and normative samples. Currently incarcerated men reported lower LCU scores than normatives for the most distant two year interval. Both groups reported higher LCU scores for the last year, however, this increase was not statistically significant in the normative sample. The incarcerated sample reported a three-fold increase in LCU scores during the year prior to arrest. This increase from the mean of year two and three was significant at $p = .001$.

3. Recent life experience of normative versus incarcerated adult males: murder, assault, and property crimes.

To study further the composition of the LCU score obtained by the currently incarcerated sample, SRE life events were grouped into eight areas of activity. Conflicts with the law include the SRE items "Detention in jail or other institutions" and "Minor violations of the law." Spouse related events include the seven SRE items concerned with marriage, divorce, separation, reconciliation, death of the spouse, and arguments with the spouse. Family events include

TABLE 2

MEAN NUMBER OF LIFE CHANGES REPORTED IN EACH OF THREE YEARS PRIOR TO INCARCERATION

	1 Year Prior	2 Years Prior	3 Years Prior
County jail inmates (N=30)	18.9	8.2	6.0
Prison inmates (Young, N=74)	14.5	8.5	7.2
	N.S.	N.S.	N.S.

N.S. Not Significant at $p = .05$

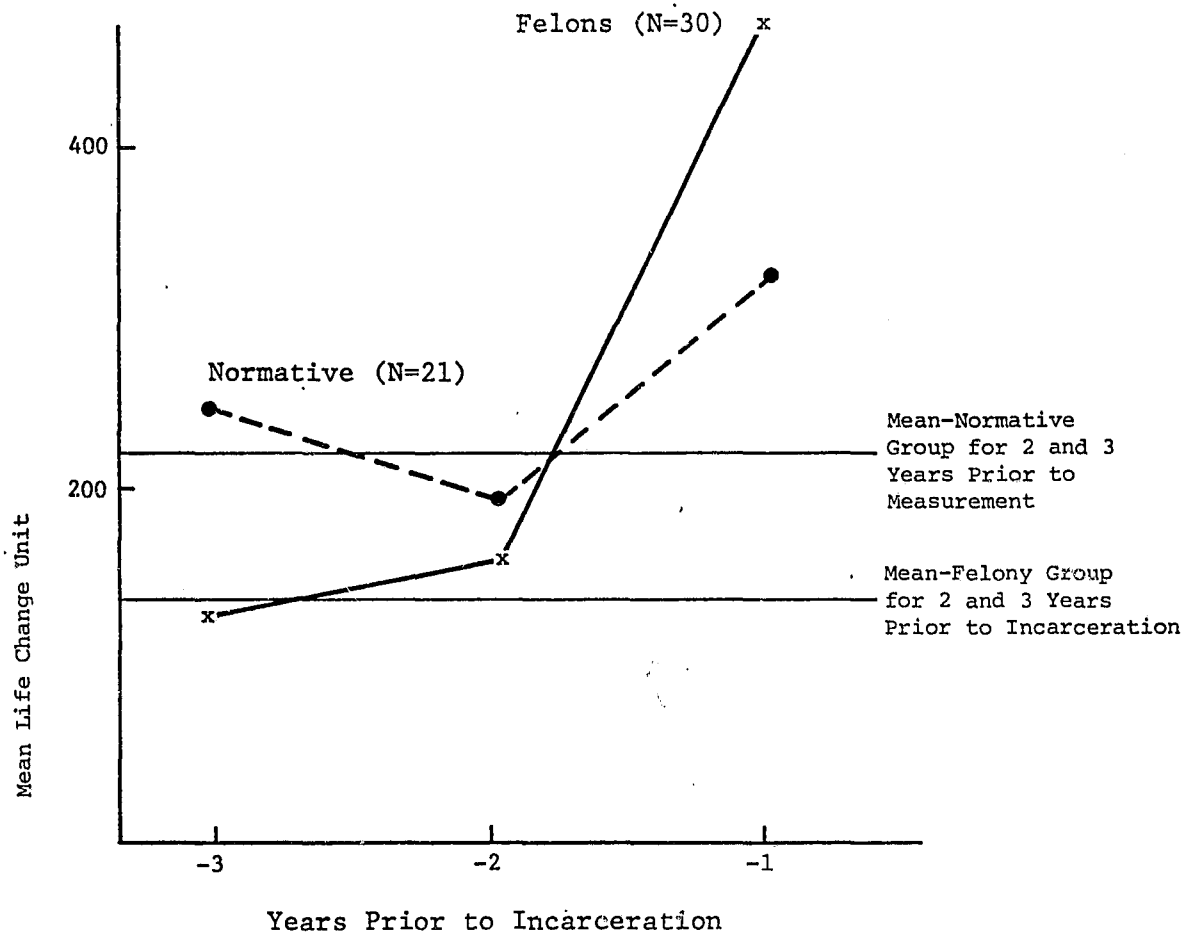


FIGURE 1
ANNUAL LIFE CHANGE UNITS FOR ADULT MALES SELECTED FELONS AND NORMATIVE GROUP

changes in the frequency of get-to-gethers, losses and gains in the number of family members, and changes in the health of family members. School changes are the "Beginning and ending of formal schooling" and "Changing to a new school." Financial items of the SRE are those concerned with changes in personal finance, mortgages and loans, business readjustments, and foreclosures. Changes in working conditions include troubles with the boss, retirement, changes in responsibilities, and being fired. Personal items of the SRE are "Outstanding personal achievement," "Death of a close friend," and "Personal illness or injury." Life style events include the nine SRE items concerned with eating, sleeping, recreation, church, personal habits, residential changes, living conditions, social activities and vacation.

The mean annual frequency of experience within each activity area is shown in Figure 2 for normative males (N=25) and three incarcerated groups charged with crimes against property, assault, and murder. The horizontal axis of the figure is arranged to show the frequencies of the normative sample. Against the normative distribution, data from each of three criminal groups is plotted. All three criminal groups showed sufficiently similar life event profiles that we treated them as one group.

In most of the event areas, incarcerated groups reported fewer recent experiences for the year prior to incarceration than the normative group reported for the year prior to the survey. Conflict with the law is the most conspicuous feature of the recent life experience of all three incarcerated groups. Moreover, conflict with the law is one only life event area in which each incarcerated group reports greater recent experience than is reported by the normative group.

4. Remote life experience of incarcerated males.

Figure 2 shows the mean annual frequency of experience within each activity area for each of three years prior to arrest in the jailed sample (N=30). During each of three years prior to current arrest, conflict with the law was the most frequently reported area of experience on the SRE. Further study of this area is reduced to a ratio of the component events: jail terms per minor violation of the law (Figure 3). In the year prior to current incarceration, this ratio reaches a peak value of 1.25 jail terms for each reported violation.

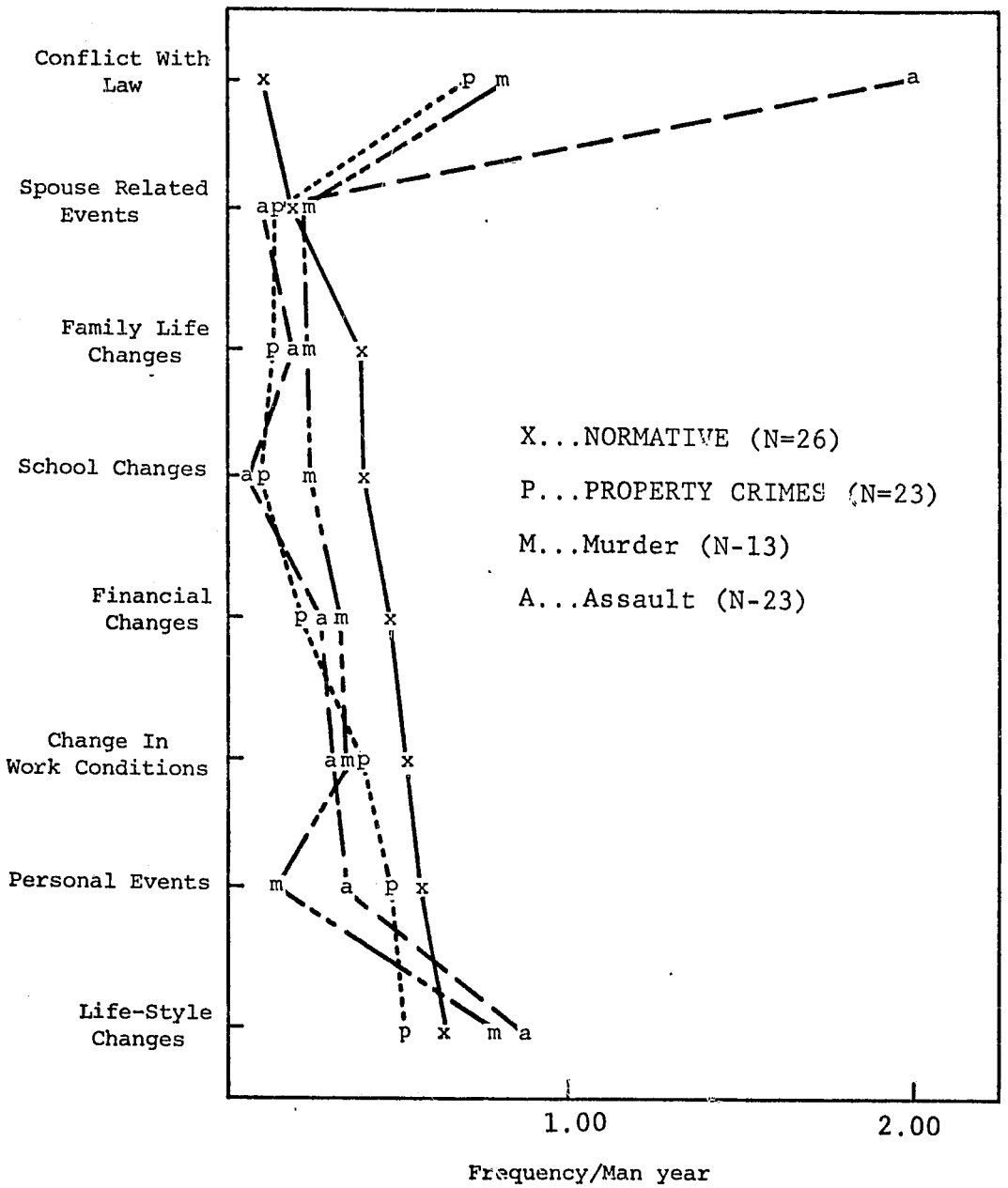


FIGURE 2
LIFE EVENT FREQUENCY PROFILES:
NORMATIVE MALES AND THREE CRIMINAL SAMPLES

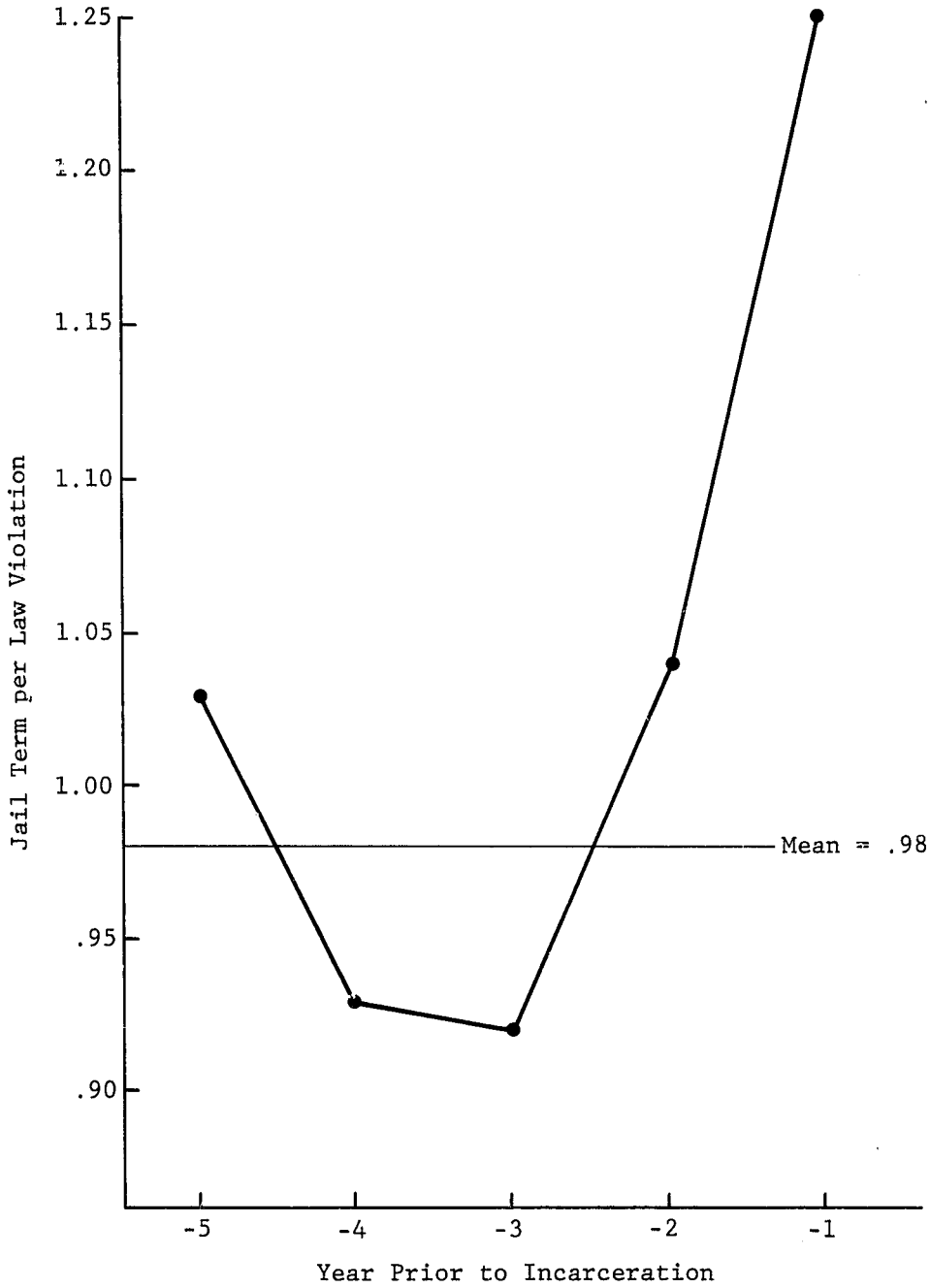


FIGURE 3
REPORTED JAIL TERMS PER REPORTED LAW VIOLATIONS
(N = 59)

5. Life change magnitude and severity of crime.

Analysis of the relationship of the LCU score and the severity of crime was possible with the sample of juvenile delinquents (N=334) in a detention center. In each of the juvenile cases, the measure of crime severity was taken directly from the court records. Crime severity is defined by Utah State law as the product of two factors: one relating to the result of the crime and the other to the type of victimization. In those cases where the record demonstrated more than a single criminal charge, the highest single score was used in this analysis.

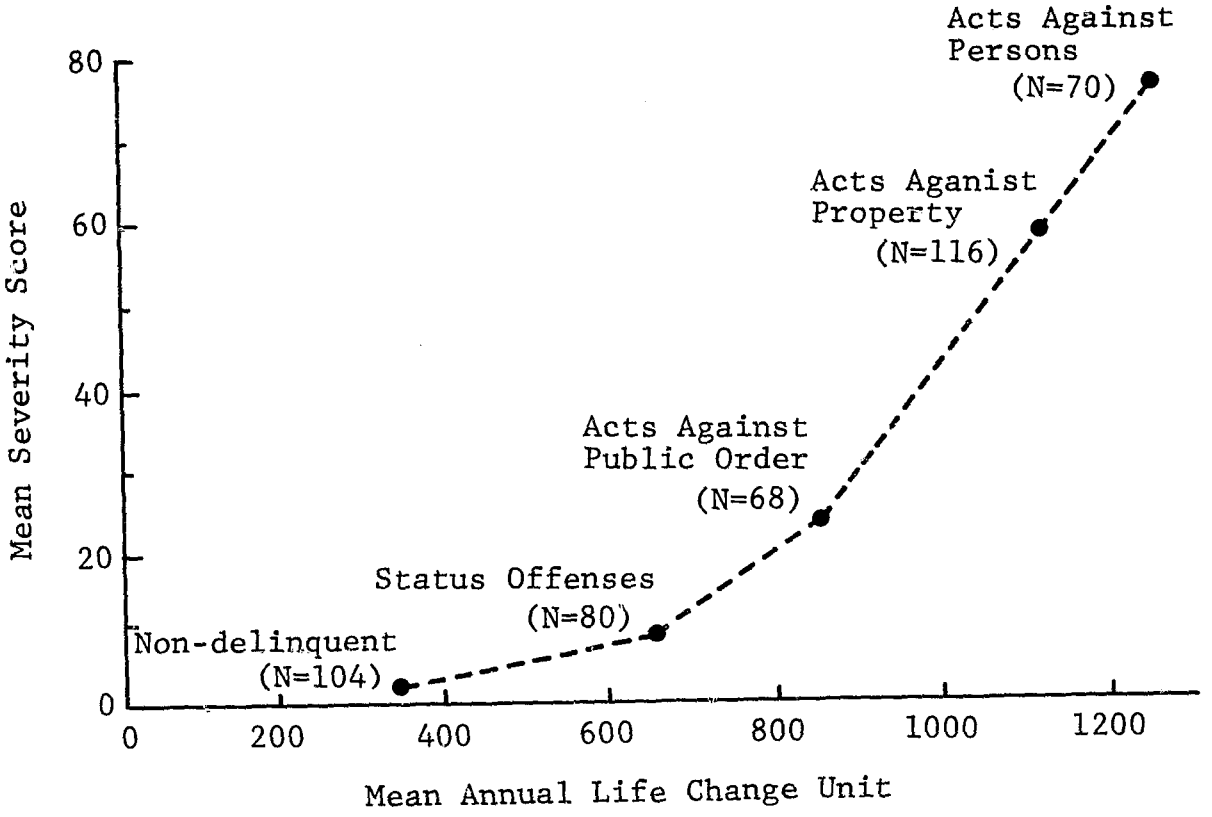
Figure 4 shows a strong relationship between mean offense severity code and LCU score for four groups of juvenile offenders and non-delinquent controls. Within the group detained for status offenses (N=80) or acts which are illegal only for juveniles, the Pearson's coefficient of correlation between one year LCU score and crime severity was .703, $p = .001$. Within the group detained for acts against public order (N=68), the correlation between LCU and severity is .510, $p = .001$. For the juveniles detained for acts against property (N=116) and acts against persons (N=70), the correlations between recent life change and crime severity are .596 and .648 respectively. Both the latter values are significant at $p = .001$.

The range of these correlations indicate that between 26 and 50 percent of the variation in crime severity scores is associated with variations in LCU score in the year prior to criminal behavior and subsequent arrest. Variance attributions are calculated as r^2.

No similar analysis was performed on data from older men, since crime severity was inadequately assessed on the self-report questionnaires. Longitudinal study of the juvenile group was not performed because SRE data was collected only for the single year prior to current arrest and incarceration.

6. Life change magnitude and the process of imprisonment.

Figure 5 (top section) shows the mean annual life change score of 176 prisoners for each of five years prior and subsequent to the onset of current incarceration. Mounting life change is observed here as in the combined jail and prison sample(Figure 1). With three years in prison, the LCU score is observed to return to a low level observed four to five years prior to incarceration. Figure 5 (bottom section) shows that the time course of this process is slower for the oldest prisoner group.



From Kulcsar (1976)

FIGURE 4
MEAN LIFE CHANGE AND JUVENILE OFFENSE SEVERITY SCORES

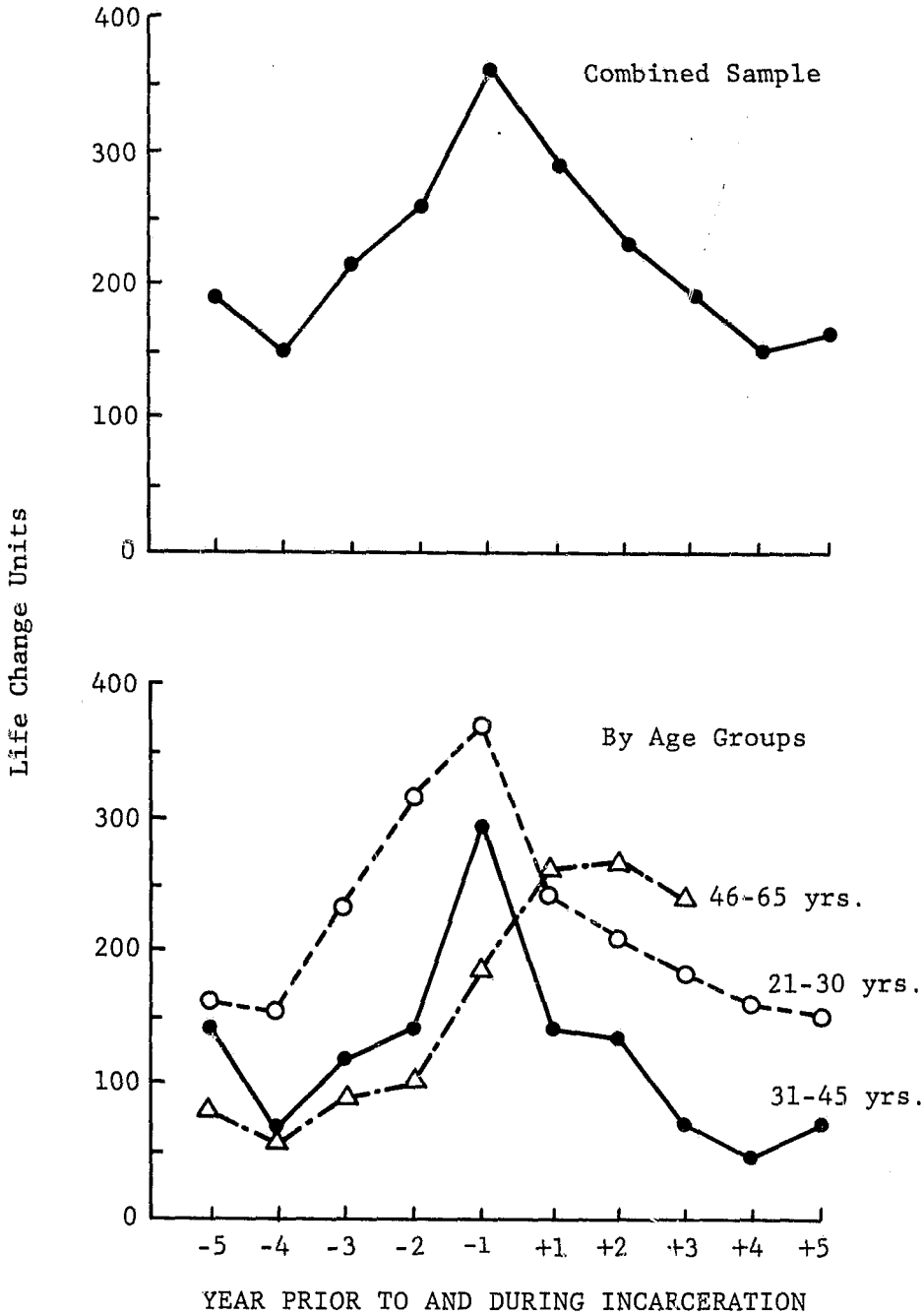


FIGURE 5
ANNUAL LIFE CHANGE UNITS BEFORE AND DURING INCARCERATION

Discussion

It was the purpose of this report to examine retrospectively the recent life history of three incarcerated samples using the methodology of the Schedule of Recent Experience (SRE). Data adduced from this device suggest that both adult and juvenile criminal behavior, arrest, and incarceration occur in a setting of mounting life change. The observed association is quantitatively similar to that observed in both prospective and retrospective studies of illness susceptibility (13) and some behavior disorders. (15, 16, 17, 18, 19, 20, 21, 22, 23, 24)

Data for this comparative study were derived from a report on the residents of a juvenile detention center in Utah, a study of inmates at state and federal prisons in Washington, and a selection of jailed men referred from court to the author (J.P.) for psychiatric evaluation. Since recent work by Masuda and Holmes (25) shows that older people report fewer life change events than young adults, this analysis compares SRE data from comparable age cohorts. It was initially hypothesized that different time intervals for SRE reports would hinder the comparison of jail and prison samples: prisoners recalled a time period which included events up to five years prior to completing the report, whereas the jail sample recalled a time period of no more than three years previous. It was observed, however, that there was no significant difference in the number of events reported by the two young samples. If impaired recall reduced the number of SRE events prisoners recalled for the year prior to incarceration, the effect was not evident for the interval two and three years prior to incarceration. Other workers have observed similarly small decrements in life event recall on the SRE. (26)

Jail and prison samples were combined for a selection of young, incarcerated, men to be compared with a normative, non-incarcerated sample. Figure 1 contains the mean LCU scores of normative and incarcerated men sharing five characteristics: all are 21 to 35 years of age, white, male, less than college educated, and none have indicated more than one personal illness or injury on the SRE for the period labeled "1" year. In the case of normative subjects, this is the year prior to completing the SRE. In the case of the incarcerated men, this period is the year prior to incarceration. This is the only analysis in this report in which illness was treated as a confounding aspect of life change measures. Incarcerated men showed a significant increase in the LCU score in the year prior to their current incarceration.

Incarcerated men also reported lower average LCU scores than normatives for the more remote period, two and three years past.

Analysis of the mean annual frequency of the various life event areas showed that, with the notable exception of "Conflicts with the law," the recent and remote life experiences of incarcerated men included fewer events in most areas than the normative men. Masuda et al. (15) also noted the lower total annual frequency of life events reported by prisoners and observed that there was only marginal correspondance between the rank order of life event frequencies reported by incarcerated groups and normatives.

Conflict with the law emerged as the most consistent and outstanding feature of the life experiences reported by incarcerated men, regardless of the specification of their crime as assault, murder, or property damage. For this reason, conflict with the law was further analyzed in its two component events: jail term and minor law violations. Figure 3 shows that the reported frequency of going to jail increases faster than the reported frequency of law violations in especially the two years prior to incarceration. Qualitatively, this type of relationship suggests that samples of those incarcerated may represent individuals selected by the justice system for exactly this pattern of behavior in the criminal record. Quantitatively, the data indicates that the men are reporting jail terms more frequently than they are reporting law violations on the SRE. This behavior is difficult to interpret and suggests that this particular area of the SRE might be profitably expanded into more meaningful events for the study of criminal groups. Although the delineation of initial arrest, booking experiences, and unapprehended criminal activity as unique life events may not effect the relationship observed between life change and criminal behavior, similar modifications in the event listing may enhance our ability to measure and study the life experiences surrounding criminal acts, arrest, and subsequent incarceration.

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